MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	1	81
PROJECT FILE NO.	607987		

TITLE SHEET & INDEX

PLAN AND PROFILE OF

INTERSECTION IMPROVEMENTS AT MAIN STREET, WEST STREET, NORTH STREET, SOUTH STREET & CHURCH STREET

IN THE TOWN OF

WARE

HAMPSHIRE COUNTY

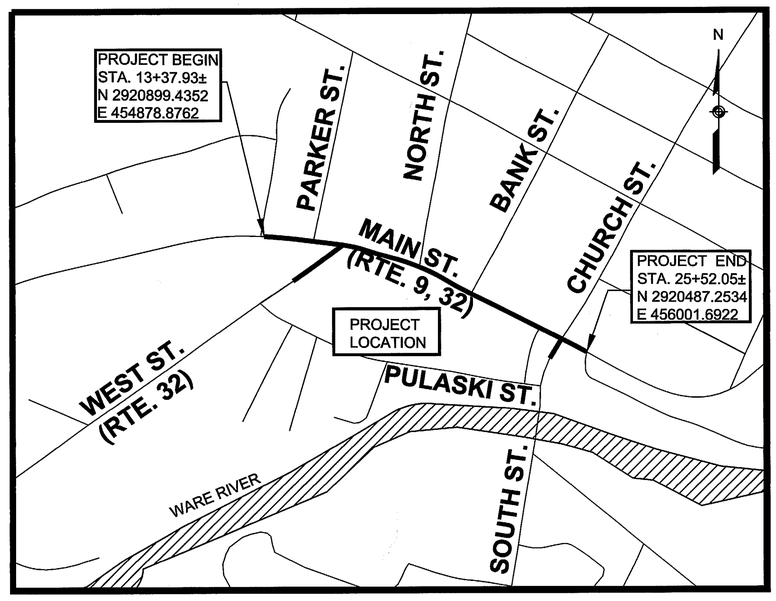
FEDERAL AID PROJECT NO. CMQ/TAP/STP-0032(017)X

THIS PLAN SET CONFORMS
TO ALL ADDENDA ISSUED
DURING THE BID PROCESS

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED APRIL 1, 2019, THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN & GENERAL NOTES
4-5	BORING LOGS
6-7	TYPICAL SECTIONS
8-10	CONSTRUCTION PLANS
11-16	PROFILES
17-23	CURB TIE & GRADING PLANS
24-26	TRAFFIC SIGN & PAVEMENT MARKINGS
27-28	TRAFFIC SIGN SUMMARY SHEET
29-38	TRAFFIC SIGNAL PLANS
39-41	TEMPORARY TRAFFIC CONTROL PLANS
42-44	UTILITY PLANS
45-47	LANDSCAPE & LIGHTING PLANS
48-51	LIGHTING DETAILS
52-53	CONSTRUCTION DETAILS
54-57	WHEELCHAIR RAMP/DRIVEWAY DETAILS
58-81	CROSS SECTIONS



0 250 500 1000
SCALE: 1" = 250'

LENGTH OF PROJECT = 1214.12 FEET = 0.230 MILES

DESIGN DESIGNATION (MAIN ST. - E. OF WEST ST.)

DESIGN SPEED	25 MPH
ADT (2014)	14,400
ADT (2025)	15,150
K	8.1%
D	51% EB
T (PEAK HOUR)	8.9% (AM), 8.1% (PM)
T (AVERAGE DAY)	4.9%
DHV	1,225
DDHV	625
FUNCTIONAL CLASSIFICATION	PRINCIPAL ARTERIAL

THIS PLAN SET CONFORMS
TO ALL ADDENDA ISSUED
DURING THE BID PROCESS

DATE	DESCRIPTION	REV #

COMMONWEALTH OF MASSACHUSETTS
JOHN G. MORGAN JR.
CIVIL
No. 46886
REGISTERED PROFESSIONAL ENGINEER
7-26-19
CHA
141 Longwater Drive, Suite 104
Norwell, MA 02061
781.982.5400 • www.chacompanies.com

massDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER — DATE 7-31-19

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR — DATE

APPROVED

HIGHWAY ADMINISTRATOR — DATE 7-31-2019

607987_HD(TITLE).DWG Plotted on 26-Jul-2019 9:31 AM

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER ON BRIDGE OR JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
		POLE SLEEVE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCE STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		HAY BALES/SILT FENCE
		TREE LINE OR LIMIT OF CLEARING AND GRUBBING
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

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

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	12" STOP LINE
	CW	12" CROSSWALK
	SWL	6" SOLID WHITE LINE
	SYL	6" SOLID YELLOW LINE
	BWL	6" BROKEN WHITE LINE
	BYL	6" BROKEN YELLOW LINE
	DWL	6" DOTTED WHITE LINE
	DYL	6" DOTTED YELLOW LINE
	DWLEx	6" DOTTED WHITE LINE EXTENSION
	DYLEx	6" DOTTED YELLOW LINE EXTENSION
	DBWL	6" DOUBLE WHITE LINE
	DBYL	6" DOUBLE YELLOW LINE

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
APS	AUDIBLE PEDESTRIAN SIGNAL
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
CRW	CONCRETE RETAINING WALL
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
PE	PERMANENT EASEMENT
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

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	2	81
PROJECT FILE NO.	607987		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
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
TE	TEMPORARY EASEMENT
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
FYA/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

607987_HD(LEGEND).DWG Plotted on 11-Jul-2019 9:02 AM

GENERAL NOTES

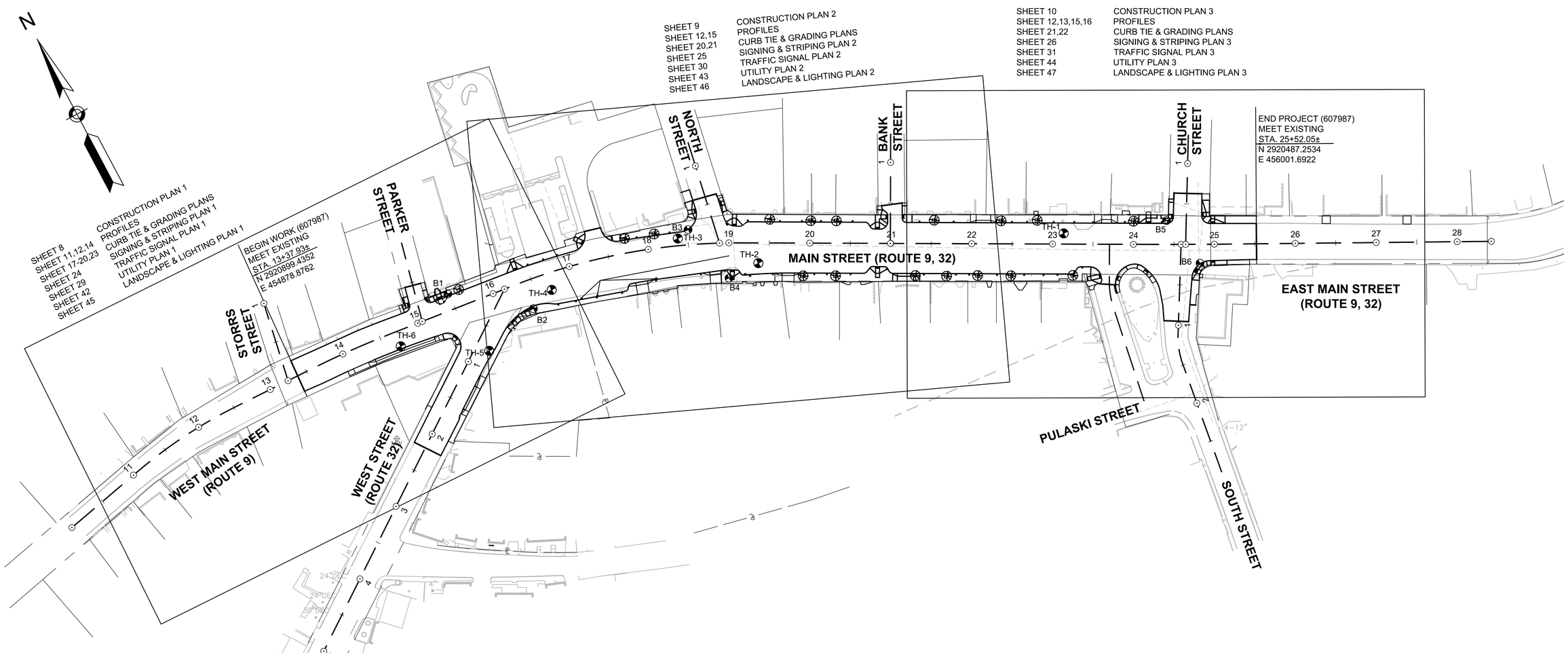
1. ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH MASSDOT STANDARD DETAILS AND SPECIFICATIONS.
2. TOPOGRAPHY DETAIL SHOWN HEREON ARE A RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY CHA CONSULTING, INC. IN OCTOBER 2011.
3. PROPERTY LINE INFORMATION SHOWN HERE IS COMPILED FROM VARIOUS SOURCES AND DOES NOT REPRESENT A PROPERTY LINE RETRACEMENT SURVEY. DEED REFERENCES ARE TO THE HAMPSHIRE COUNTY REGISTRY OF DEEDS UNLESS OTHERWISE NOTED.
4. VERTICAL DATUM, RIM, INVERT AND SPOT ELEVATIONS ARE PUBLISHED FOR DESIGN PURPOSES ONLY. VERTICAL BENCHMARKS SHOWN ON THE PLAN ARE TO BE USED FOR CONSTRUCTION EFFORTS.

   IN THE EVENT THAT BENCHMARKS (TBM'S), ESTABLISHED FOR THIS PROJECT AND PUBLISHED ON THIS SURVEY, ARE DESTROYED, NOT RECOVERABLE OR A DISCREPANCY IS FOUND, THE USER SHOULD NOTIFY THIS FIRM IN WRITING PRIOR TO COMMENCING OR CONTINUING ANY WORK.
5. UNLESS OTHERWISE NOTED DEED AND PLAN REFERENCES ARE TO THE HAMPSHIRE COUNTY REGISTRY OF DEEDS.
6. LOCATIONS OF SUBSURFACE UTILITIES SHOWN HEREON ARE APPROXIMATE AND ADDITIONAL UTILITIES MAY EXIST THAT ARE NOT SHOWN ON THIS PLAN. LOCATIONS ARE COMPILED FROM UTILITY PLANS OF RECORD, DIG-SAFE FIELD MARKINGS, RIM AND INVERT INFORMATION HAS BEEN COMPILED AND FIELD VERIFIED WHERE POSSIBLE. THIS INFORMATION IS NOT TO BE USED FOR CONSTRUCTION. PRIOR TO ANY CONSTRUCTION, CONTACT DIG-SAFE AT (1-800-344-7233) TO FIELD VERIFY LOCATION OF ALL UTILITIES.
7. HORIZONTAL AND VERTICAL DATUMS REFERENCED FROM NAD OF '83 AND NAVD OF '88.
8. THE CONTRACTOR WILL COORDINATE ALL PRIVATE CASTINGS AND POLES THAT ARE TO BE ADJUSTED, RESET OR RELOCATED WITH THE APPROPRIATE UTILITY PURVEYOR. THE RELOCATION, INSTALLATION OR REMOVAL OF PRIVATE UTILITIES SHALL BE ACCOMPLISHED BY THEIR OWNER. THE CONTRACTOR SHALL COOPERATE WITH THE PRIVATE UTILITY PURVEYORS AND ALLOW THEM ADEQUATE TIME TO COMPLETE THEIR WORK IN ADVANCE OF PERFORMING ANY PAVING OPERATIONS OR OTHER FINISH WORK.
9. THE CONTRACTOR SHALL MAKE DETERMINATIONS OF SUBSURFACE CONDITIONS, INCLUDING THE LOCATION OF ROCK AND THE ACTUAL LOCATION OF UTILITIES OR OTHER FEATURES WHICH MAY AFFECT THE WORK.
10. THE CONTRACTOR SHALL MAINTAIN SAFE AND CONVENIENT ACCESS TO PRIVATE PROPERTIES AS DEFINED IN SPECIFICATIONS.
11. THE FLOW OF TRAFFIC THROUGH CONSTRUCTION ZONES IN EXISTING PUBLIC WAYS SHALL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS AND THE SPECIAL PROVISIONS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
12. ALL PERMANENT PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
13. A MINIMUM OF 4" LOAM AND SEED SHALL BE PLACED AS NOTED ON THE PLANS AND ON DISTURBED AREAS.
14. THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE LAND SURVEYOR THAT IS BASED ON HIS BEST KNOWLEDGE, INFORMATION, AND BELIEF, FORMULATED IN ACCORDANCE WITH COMMONLY ACCEPTED PROCEDURES CONSISTENT WITH APPLICABLE STANDARDS OF PRACTICE, AND AS SUCH IT CONSTITUTES NEITHER A GUARANTEE NOR WARRANTY, EITHER EXPRESS OF IMPLIED. THE CERTIFICATIONS SHOWN ARE NOT CERTIFICATIONS TO THE TITLE OF OWNERSHIP OF THE PROPERTIES SHOWN.
15. FOR OTHER NOTES, REFER TO SPECIFIC PLANS AND DETAILS.

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	3	81
PROJECT FILE NO.	607987		

KEY PLAN & GENERAL NOTES



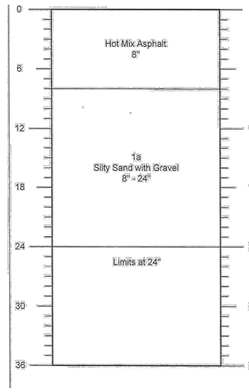
607987_HD(KEY_PLAN).DWG Plotted on 11-Jul-2019 9:02 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

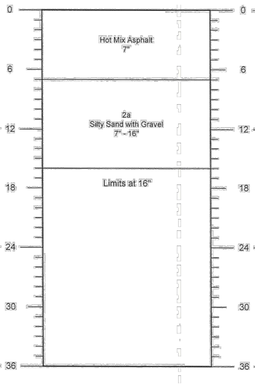
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	4	81
PROJECT FILE NO.	607987		

BORING LOGS - 1

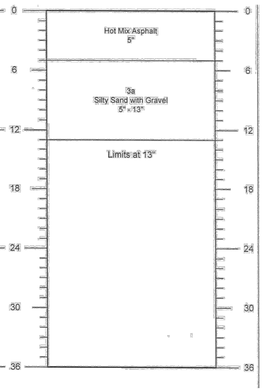
PAVEMENT CORE TH-1
STA 23+14, 13.2' LT



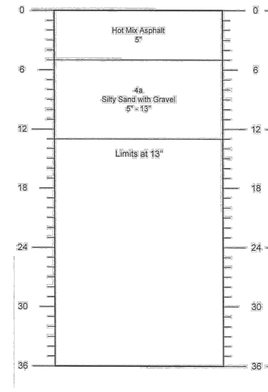
PAVEMENT CORE TH-2
STA 19+37, 25.0' RT



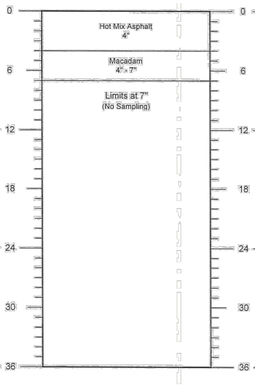
PAVEMENT CORE TH-3
STA 18+38, 9.0' LT



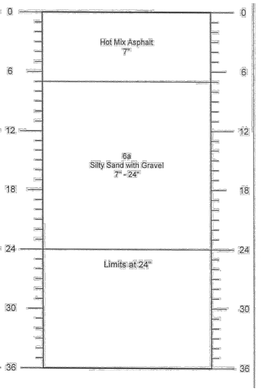
PAVEMENT CORE TH-4
STA 16+70, 21.1' RT



PAVEMENT CORE TH-5
STA 0+77, 17.2' LT



PAVEMENT CORE TH-6
STA 14+70, 18.9' RT



BORING B-1
STA 15+48, 20.1' LT

TEST BORING LOG — SHEET 1

Soil Exploration Corp.
Geotechnical Drilling
Groundwater Monitor Well
148 Pioneer Drive
Leominster, MA 01453
978 840-0391

ATC Group Services LLC
Site: Mast Arms Rte 9.
Main Street
Ware, MA

BORING B-1
PROJECT NO. 17-1214
DATE: December 7, 2017

Ground Elevation:
Date Started: December 7, 2017
Date Finished: December 7, 2017
Driller: TF
Soil Engineer/Geologist: Antonio Rodrigues

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing B/ft	Sample No.	Pen/Rec	Sample Depth	Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
							Concrete (sidewalk)
1		1	8"	0'6"- 2'6"	8-11-17-12	0'4"	
5		2	6"	5'0"- 7'0"	36-49-52-63		Medium dense to very dense, fine to coarse sand, fine to coarse gravel, cobbles, little inorganic silt.
10		3	12"	10'0" - 12'0"	12-37-19-21		
						13'0"	
15		4	12"	15'0" – 17'0"	10-10-11-18		
							Medium dense, fine sand, little medium to coarse sand, little fine to coarse gravel.
20		5	12"	20'0" 22'0"	11-11-15-17		
						22'0"	End of boring 22' Dry, No Water Encountered
25							
30							
35							
39							

Notes: Hollow Stem Auger Size - 4 1/4"

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense	Trace	0 to 10%		CASING	SAMPLE	CORE TYPE
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff, 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard	Little	10 to 20%	ID SIZE (IN)		SS	
	Some	20 to 35%	HAMMER WGT (LB)		140 lb.	
	And	35% to 50%	HAMMER FALL (IN)		30"	

BORING B-2
STA 16+40, 35.5' RT

TEST BORING LOG — SHEET 2

Soil Exploration Corp.
Geotechnical Drilling
Groundwater Monitor Well
148 Pioneer Drive
Leominster, MA 01453
978 840-0391

ATC Group Services LLC
Site: Mast Arms Rte 9.
Main Street
Ware, MA

BORING B-2
PROJECT NO. 17-1214
DATE: December 11, 2017

Ground Elevation:
Date Started: December 11, 2017
Date Finished: December 11, 2017
Driller: TF
Soil Engineer/Geologist: Antonio Rodrigues

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing B/ft	Sample No.	Pen/Rec	Sample Depth	Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
							Concrete (Sidewalk)
1		1	12"	0'6"- 2'6"	6-5-6-6	0'4"	
5		2	10"	5'0"- 7'0"	16-19-22-23		Medium dense, fine sand, some medium sand, inorganic silt, some coarse sand, some fine to coarse gravel.
10		3	12"	10'0" - 12'0"	41-47-68-37		
						13'0"	
15		4	12"	15'0" – 17'0"	16-17-21-26		
							Dense to very dense, fine to coarse gravel, fine to coarse sand, cobbles, isolated small boulders, little inorganic silt.
20		5	14"	20'0" 22'0"	19-18-29-37		
						22'0"	End of boring 22' Dry, No Water Encountered
25							
30							
35							
39							

Notes: Hollow Stem Auger Size - 4 1/4"

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense	Trace	0 to 10%		CASING	SAMPLE	CORE TYPE
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff, 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard	Little	10 to 20%	ID SIZE (IN)		SS	
	Some	20 to 35%	HAMMER WGT (LB)		140 lb.	
	And	35% to 50%	HAMMER FALL (IN)		30"	

BORING B-3
STA 18+51, 18.7' LT

TEST BORING LOG — SHEET 3

Soil Exploration Corp.
Geotechnical Drilling
Groundwater Monitor Well
148 Pioneer Drive
Leominster, MA 01453
978 840-0391

ATC Group Services LLC
Site: Mast Arms Rte 9.
Main Street
Ware, MA

BORING B-3
PROJECT NO. 17-1214
DATE: December 11, 2017

Ground Elevation:
Date Started: December 8, 2017
Date Finished: December 11, 2017
Driller: TF
Soil Engineer/Geologist: Antonio Rodrigues

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing B/ft	Sample No.	Pen/Rec	Sample Depth	Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
							Hot Mix Asphalt (Roadway)
1						0'4"	*Vacuum Excavated for Utility clearance from 0'4" to 6'9" prior to Boring being drilled.*
5		1	18"	5'0"- 7'0"	4-4-4-5		Loose, fine sand, some inorganic silt, little medium to coarse sand, trace fine gravel.
						8'0"	
10		2	14"	10'0" - 12'0"	26-41-24-29		
							Very dense, fine to coarse gravel, fine to coarse sand, cobbles, isolated small boulders, little inorganic silt, dry.
15		3	6"	15'0" – 17'0"	16-31-29-40		
20		4	8"	20'0" 22'0"	22-28-35-34		
						22'0"	End of boring 22' Dry, No Water Encountered.
25							
30							
35							
39							

Notes: Hollow Stem Auger Size - 4 1/4"

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense	Trace	0 to 10%		CASING	SAMPLE	CORE TYPE
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff, 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard	Little	10 to 20%	ID SIZE (IN)		SS	
	Some	20 to 35%	HAMMER WGT (LB)		140 lb.	
	And	35% to 50%	HAMMER FALL (IN)		30"	

607987_HDI(KEY_PLAN).DWG Plotted on 11-Jul-2019 9:02 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	5	81
PROJECT FILE NO.	607987		

BORING LOGS - 2

607987_HD(KEY_PLAN).DWG Plotted on 11-Jul-2019 9:02 AM

BORING B-4
STA 19+00, 43.4' RT

TEST BORING LOG — SHEET 4

Soil Exploration Corp.
Geotechnical Drilling
Groundwater Monitor Well
148 Pioneer Drive
Leominster, MA 01453
978 840-0391

ATC Group Services LLC
Site: Mast Arms Rte 9.
Main Street
Ware, MA

BORING B-4
PROJECT NO. 17-1214
DATE: December 11, 2017

Ground Elevation:
Date Started: December 8, 2017
Date Finished: December 11, 2017
Driller: TF
Soil Engineer/Geologist: Antonio Rodrigues

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing B/ft	Sample No.	Pen/Rec	Depth	Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
						0'4"	Concrete (Sidewalk)
1							*Vacuum Excavated for Utility clearance from 0'4" to 6'0" prior to Boring being drilled.*
5		1	5"	5'0"- 7'0"	5-6-10-11		Medium dense to very dense, fine to coarse gravel, fine to coarse sand, cobbles, little inorganic silt, dry.
10		2	4"	10'0" - 11'6"	32-47-73		
						13'0"	
15		3	12"	15'0' – 17'0"	8-7-9-10		Medium dense, fine to coarse sand, trace inorganic silt, trace gravel.
						17'0"	
20		4	10"	20'0' 22'0"	10-14-17-25		Medium dense, fine to coarse sand, some fine to coarse gravel, little cobbles, little inorganic silt, dry.
						22'0"	End of boring 22' Dry, No Water Encountered
25							
30							
35							
39							

Notes: Hollow Stem Auger Size = 4 1/4"

					CASING	SAMPLE	CORE TYPE
Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense	Trace	0 to 10%					
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard	Little	10 to 20%	ID SIZE (IN)			SS	
	Some	20 to 35%	HAMMER WGT (LB)			140 lb.	
	And	35% to 50%	HAMMER FALL (IN)			30"	

BORING B-5
STA 24+41, 29.4' LT

TEST BORING LOG — SHEET 5

Soil Exploration Corp.
Geotechnical Drilling
Groundwater Monitor Well
148 Pioneer Drive
Leominster, MA 01453
978 840-0391

ATC Group Services LLC
Site: Mast Arms Rte 9.
Main Street
Ware, MA

BORING B-5
PROJECT NO. 17-1214
DATE: December 11, 2017

Ground Elevation:
Date Started: December 11, 2017
Date Finished: December 11, 2017
Driller: TF
Soil Engineer/Geologist: Antonio Rodrigues

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING	STABILIZATION
12/12/17	14'0"	N/A	Upon Completion

Depth Ft.	Casing B/ft	Sample No.	Pen/Rec	Depth	Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
						0'4"	Concrete (Sidewalk)
1		1	6"	0'6" – 2'6"	2-3-3-3		Loose, fine to medium sand, little coarse sand, trace fine to coarse gravel.
						2'6"	
5		2	12"	5'0"- 7'0"	10-10-11-16		Medium dense to very dense, fine to coarse sand, fine to coarse gravel, cobbles, little inorganic silt.
10		3	6"	10'0" - 11'3"	31-62-50/3"		
						13'0"	
15		4	12"	15'0' – 17'0"	33-46-54-61		Very dense till, fine sand and some inorganic silt embedded with medium to coarse sand, fine to coarse gravel, cobbles isolated small boulders, wet.
20		5	10"	20'0" 21'2"	49-76-50/2"		
						21'2"	End of boring 21'2" Water Encountered at 14'
25							
30							
35							
39							

Notes: Hollow Stem Auger Size = 4 1/4"

					CASING	SAMPLE	CORE TYPE
Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense	Trace	0 to 10%					
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard	Little	10 to 20%	ID SIZE (IN)			SS	
	Some	20 to 35%	HAMMER WGT (LB)			140 lb.	
	And	35% to 50%	HAMMER FALL (IN)			30"	

BORING B-6
STA 24+82, 23.3' RT

TEST BORING LOG — SHEET 6

Soil Exploration Corp.
Geotechnical Drilling
Groundwater Monitor Well
148 Pioneer Drive
Leominster, MA 01453
978 840-0391

ATC Group Services LLC
Site: Mast Arms Rte 9.
Main Street
Ware, MA

BORING B-6
PROJECT NO. 17-1214
DATE: December 7, 2017

Ground Elevation:
Date Started: December 7, 2017
Date Finished: December 7, 2017
Driller: TF
Soil Engineer/Geologist: Antonio Rodrigues

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING	STABILIZATION
12/10/17	14'0"	N/A	Upon Completion

Depth Ft.	Casing B/ft	Sample No.	Pen/Rec	Depth	Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
							Hot Mix Asphalt (Roadway)
1		1	8"	0'6" – 2'6"	9-16-28-20	0'4"	Dense, fine to coarse sand, fine to coarse gravel, little inorganic silt.
						3'0"	
5		2	10"	5'0"- 7'0"	4-8-5-17		Medium dense, fine sand, trace medium to coarse sand, trace inorganic silt.
						8'0"	
10		3	12"	10'0" - 12'0"	16-33-39-43		Very dense, fine to medium sand, some fine to coarse gravel, cobbles, trace inorganic silt.
						14'0"	
15		4	16"	15'0' – 17'0"	31-46-41-24		
20		5	16"	20'0" 22'0"	14-18-23-25		Very dense to dense till, fine sand and inorganic silt embedded with medium to coarse sand, fine to coarse gravel, cobbles, wet.
						22'0"	End of boring 22' Water Encountered at 14'
25							
30							
35							
39							

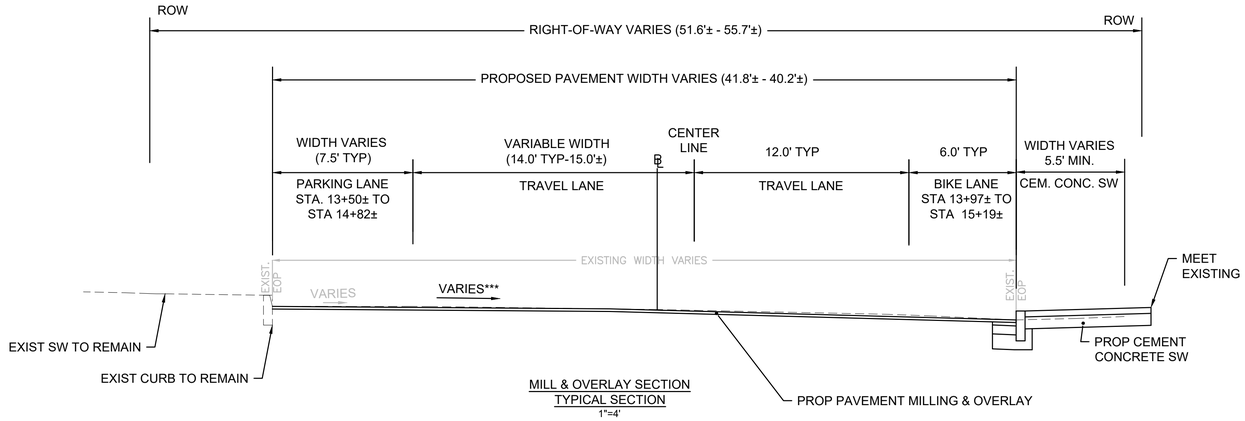
Notes: Hollow Stem Auger Size = 4 1/4"

					CASING	SAMPLE	CORE TYPE
Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense	Trace	0 to 10%					
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard	Little	10 to 20%	ID SIZE (IN)			SS	
	Some	20 to 35%	HAMMER WGT (LB)			140 lb.	
	And	35% to 50%	HAMMER FALL (IN)			30"	

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

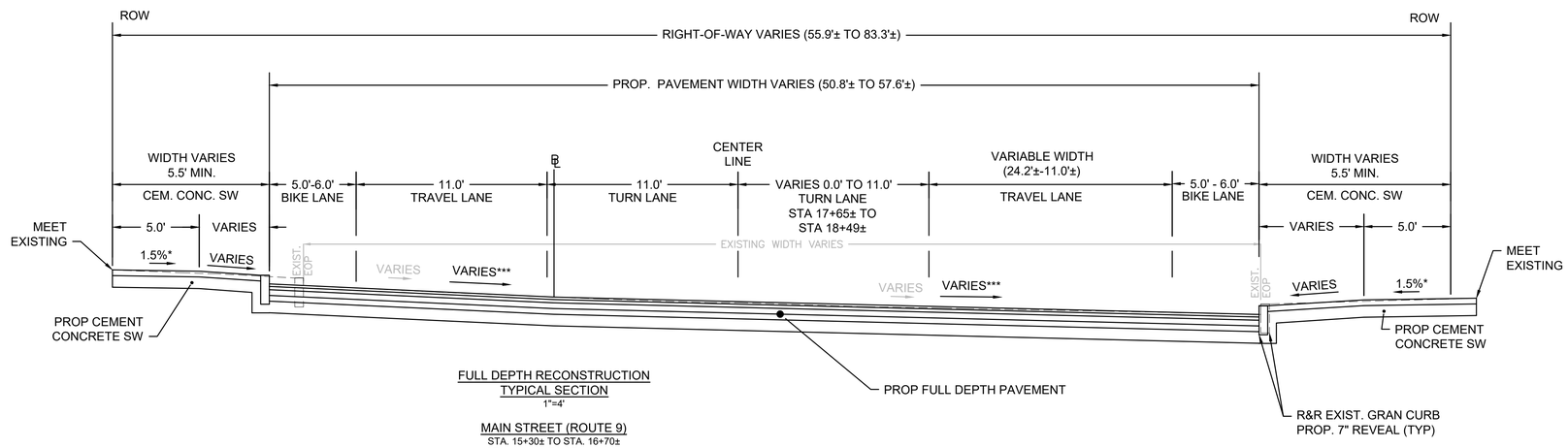
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	6	81
PROJECT FILE NO.	607987		

TYPICAL SECTIONS - 1



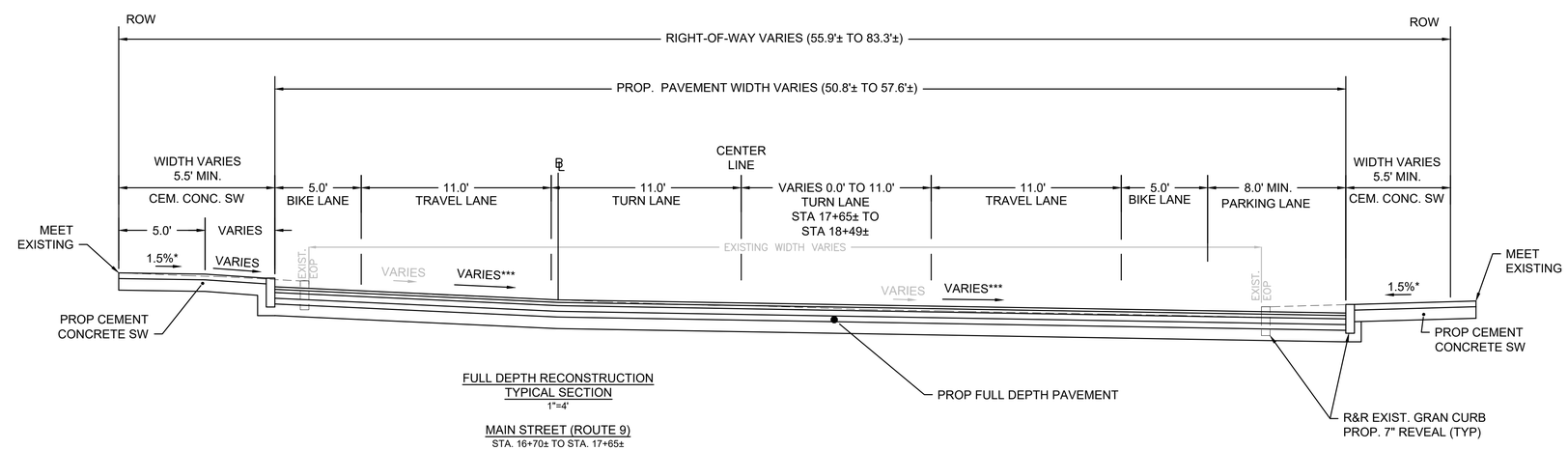
MILL & OVERLAY SECTION
TYPICAL SECTION
1"=4'

MAIN STREET (ROUTE 9)
STA. 13+37.93± TO STA. 15+30±



FULL DEPTH RECONSTRUCTION
TYPICAL SECTION
1"=4'

MAIN STREET (ROUTE 9)
STA. 15+30± TO STA. 16+70±
STA. 17+65± TO STA. 19+50±



FULL DEPTH RECONSTRUCTION
TYPICAL SECTION
1"=4'

MAIN STREET (ROUTE 9)
STA. 16+70± TO STA. 17+65±

PAVEMENT NOTES

PROPOSED PAVEMENT MILLING & OVERLAY

1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
1.75" PAVEMENT MICROMILLING

PROPOSED MILL & STRUCTURAL OVERLAY

1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
VARIABLE DEPTH PAVEMENT MICROMILLING

PROPOSED FULL DEPTH PAVEMENT

1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
2.25" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER
4" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER
4" DENSE GRADED CRUSHED STONE OVER
8" GRAVEL BORROW - TYPE B

PROPOSED FULL DEPTH PAVEMENT BOX WIDENING GREATER THAN 4 FEET

1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
2.25" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER
4" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER
4" DENSE GRADED CRUSHED STONE OVER
8" GRAVEL BORROW - TYPE B

PROPOSED FULL DEPTH PAVEMENT BOX WIDENING LESS THAN 4 FEET

1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
2.25" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER
6" CEMENT CONCRETE BASE COURSE OVER
8" GRAVEL BORROW - TYPE B

PROPOSED HOT MIX ASPHALT DRIVEWAY

1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
8" GRAVEL BORROW - TYPE B

PROPOSED CEMENT CONCRETE DRIVEWAY APRON

6" CEMENT CONCRETE OVER
8" GRAVEL BORROW - TYPE B

PROPOSED HOT MIX ASPHALT WALK SURFACE

1" SUPERPACE SURFACE COURSE 9.5 (SSC-9.5) OVER
1.5" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
8" GRAVEL BORROW - TYPE B

PROPOSED CEMENT CONCRETE SIDEWALK/ WHEELCHAIR RAMP

4" CEMENT CONCRETE OVER
8" GRAVEL BORROW - TYPE B**

PROPOSED PERMANENT HMA TRENCH PATCH
1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
2.25" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER
4" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER
4" DENSE GRADED CRUSHED STONE OVER
8" GRAVEL BORROW - TYPE B OVER COMPACTED TRENCH BACKFILL

PROPOSED TEMPORARY HMA TRENCH PATCH
2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SSC-12.5) OVER
12" GRAVEL BORROW - TYPE B OVER COMPACTED TRENCH BACKFILL

*TOLERANCE FOR CONSTRUCTION ±0.5%

**EXISTING GRAVEL THAT MEETS THE SPECIFICATION FOR GRAVEL BORROW - TYPE B (M.1.03.0), SHALL BE REUSED WHEN DETERMINED BY THE ENGINEER.

***SEE CROSS SECTIONS FOR CROSS SLOPE INFORMATION.

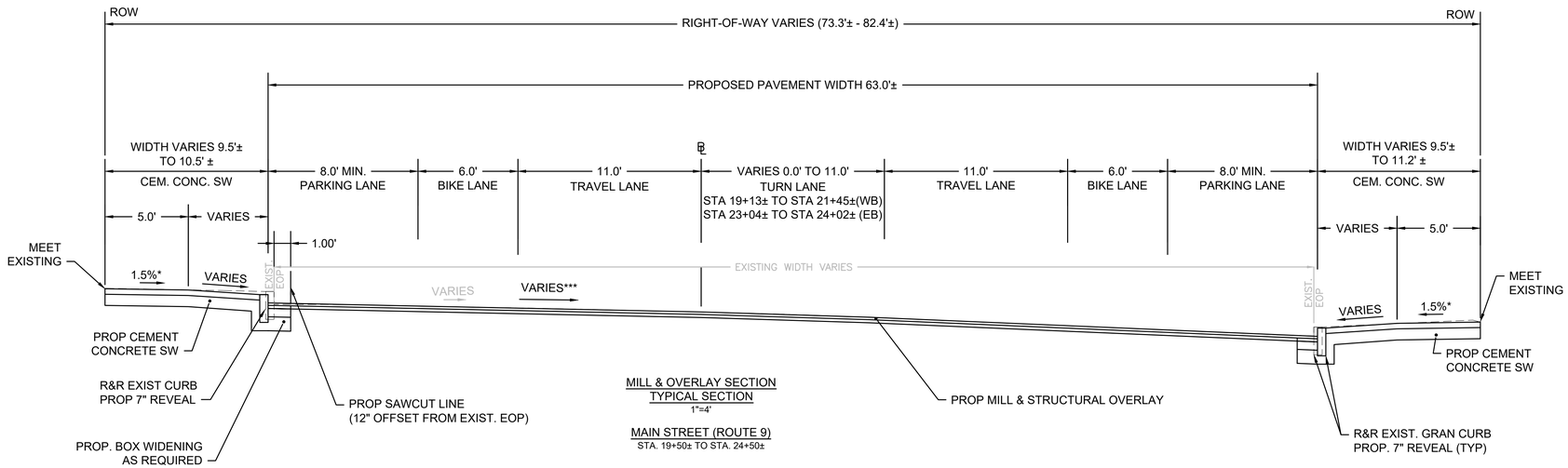
***** ASPHALT EMULSION FOR TACK COAT SHALL SPECIFY (RS-1H) TO RESIST TRACKING OF TACK COAT DURING PAVING OPERATIONS. TACK COAT SHALL BE APPLIED TO ALL SURFACES TO BE PAVED WITH HMA.

607987_HD(TYP).DWG Plotted on 11-Jul-2019 9:02 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

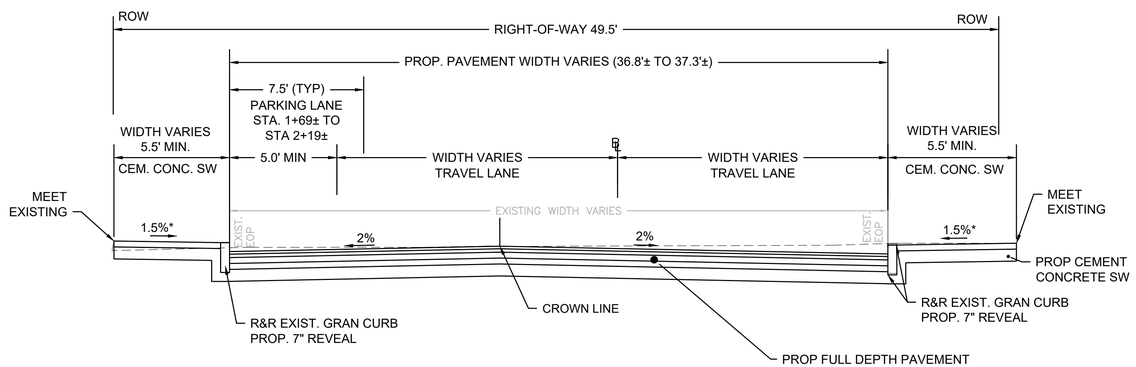
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	7	81
PROJECT FILE NO.	607987		

TYPICAL SECTIONS - 2



MILL & OVERLAY SECTION
TYPICAL SECTION
1"=4'

MAIN STREET (ROUTE 9)
STA. 19+50± TO STA. 24+50±



FULL DEPTH RECONSTRUCTION
TYPICAL SECTION
1"=4'

WEST STREET
STA. 0+00± TO STA. 1+99±

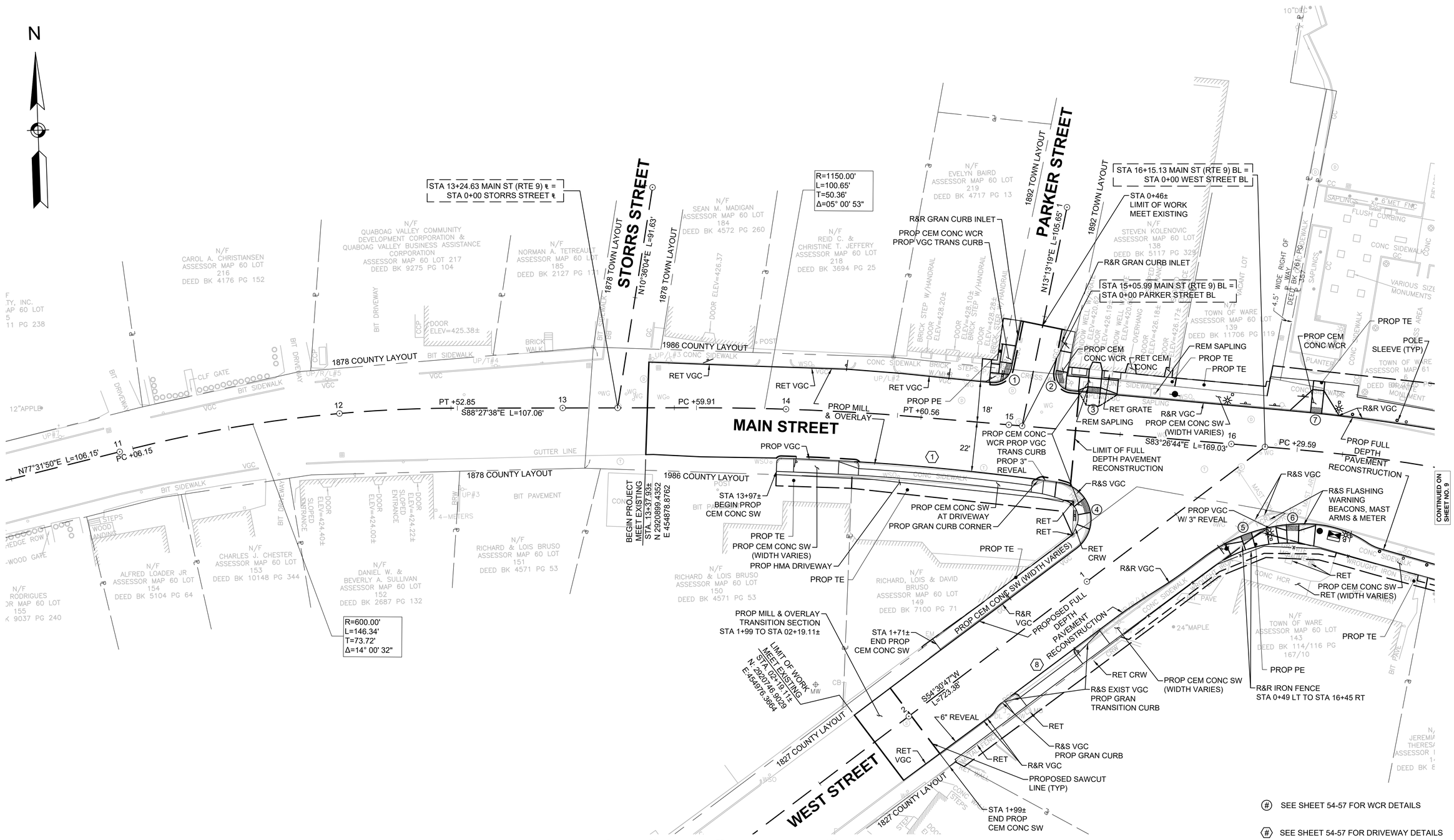
607987_HD(TYP).DWG Plotted on 11-Jul-2019 9:02 AM

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS	LIGHTING DETAILS
NONE	SEE SHEET 29	SEE SHEET 42	SEE SHEET 42	SEE SHEET 45

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	8	81
PROJECT FILE NO.	607987		

CONSTRUCTION PLAN - 1



(#) SEE SHEET 54-57 FOR WCR DETAILS

(#) SEE SHEET 54-57 FOR DRIVEWAY DETAILS

FOR PROFILES SEE SHEETS 11,14

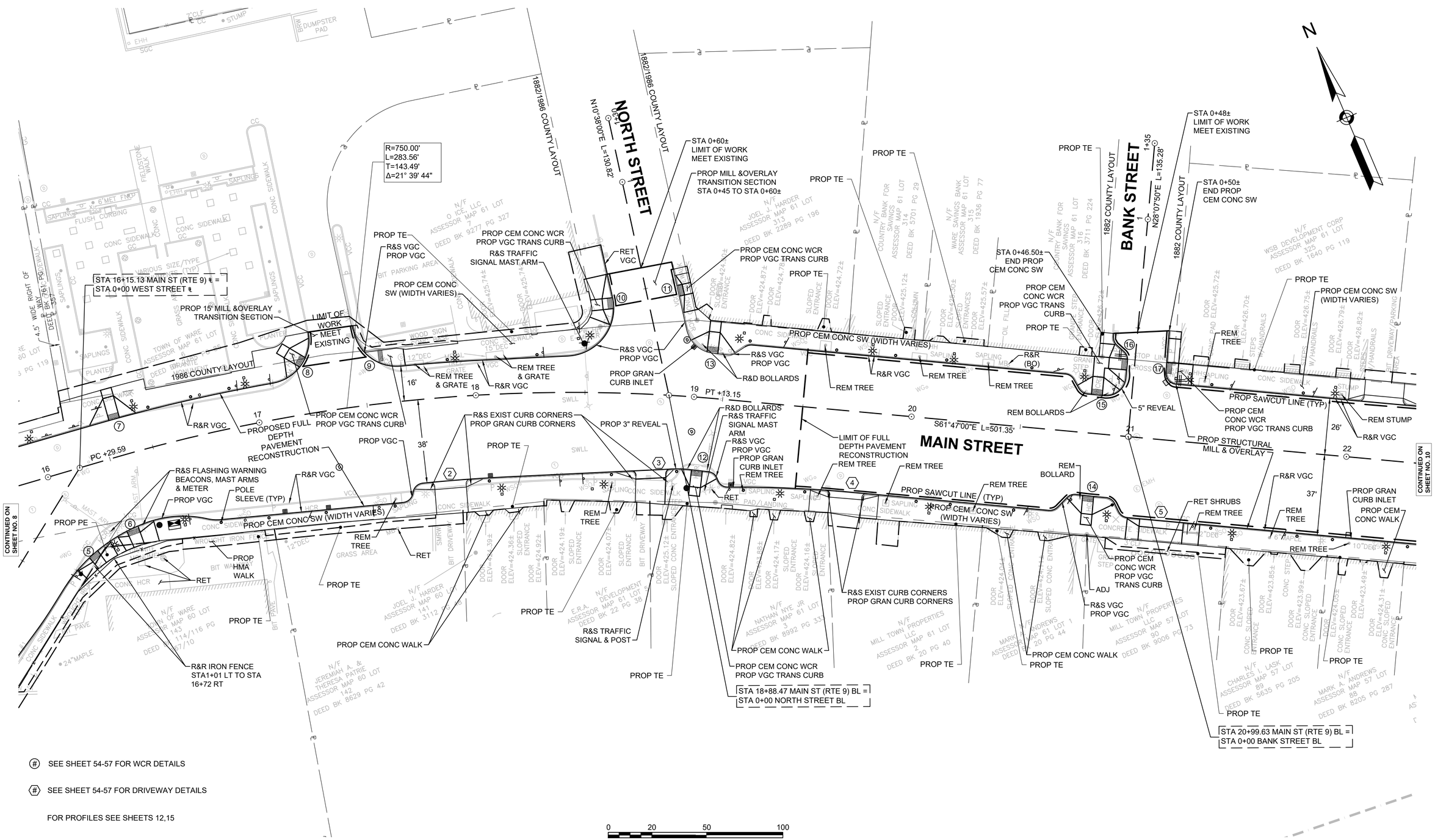
607987_HD(CP).DWG Plotted on 11-Jul-2019 9:03 AM

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS	LIGHTING DETAILS
NONE	SEE SHEET 30	SEE SHEET 43	SEE SHEET 43	SEE SHEET 46

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	9	81
PROJECT FILE NO.	607987		

CONSTRUCTION PLAN - 2



(#) SEE SHEET 54-57 FOR WCR DETAILS

(#) SEE SHEET 54-57 FOR DRIVEWAY DETAILS

FOR PROFILES SEE SHEETS 12,15

0 20 50 100
SCALE: 1" = 20'

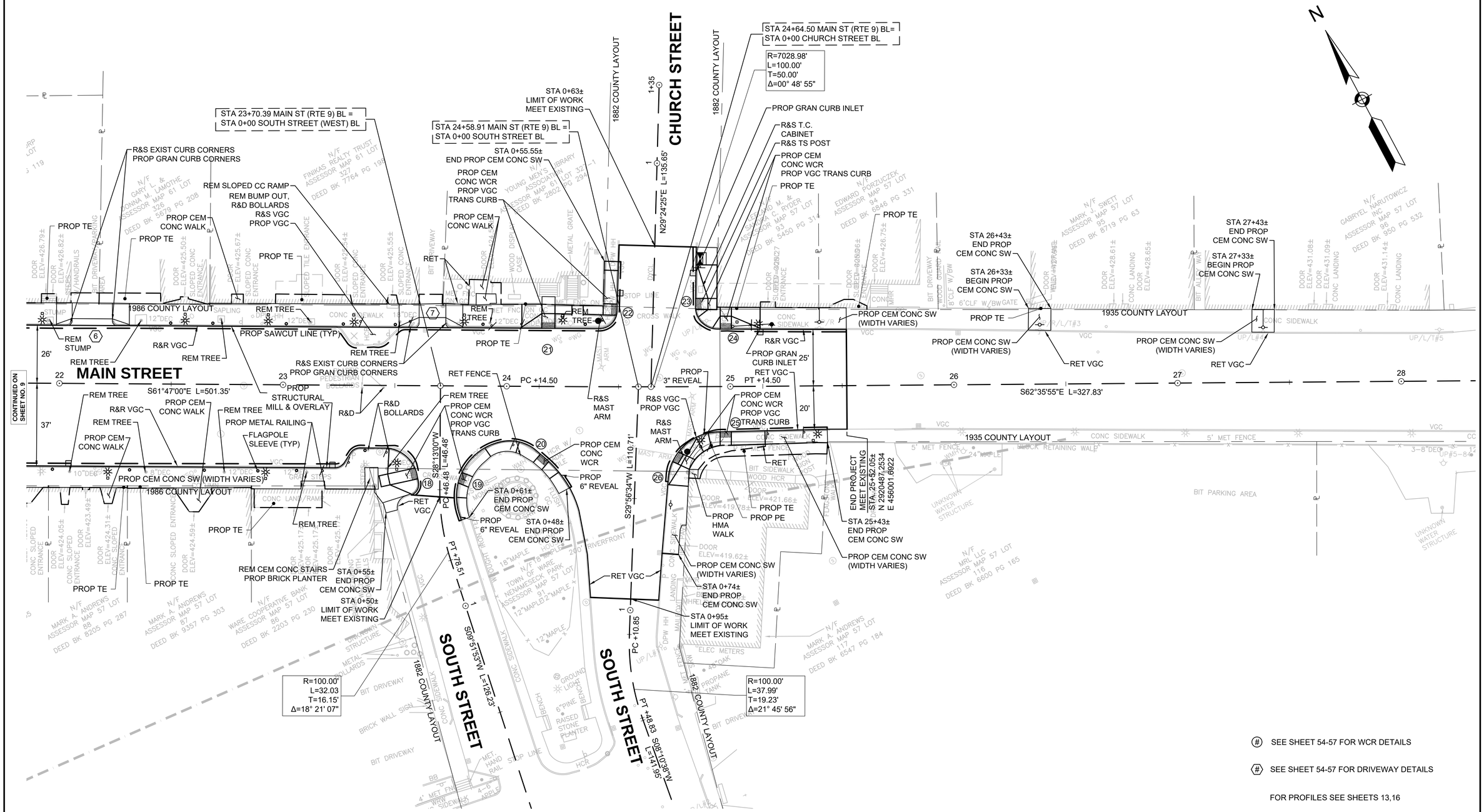
607987_HD(CP).DWG Plotted on 11-Jul-2019 9:03 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	10	81
PROJECT FILE NO.	607987		

CONSTRUCTION PLAN - 3

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS	LIGHTING DETAILS
NONE	SEE SHEET 31	SEE SHEET 44	SEE SHEET 44	SEE SHEET 47

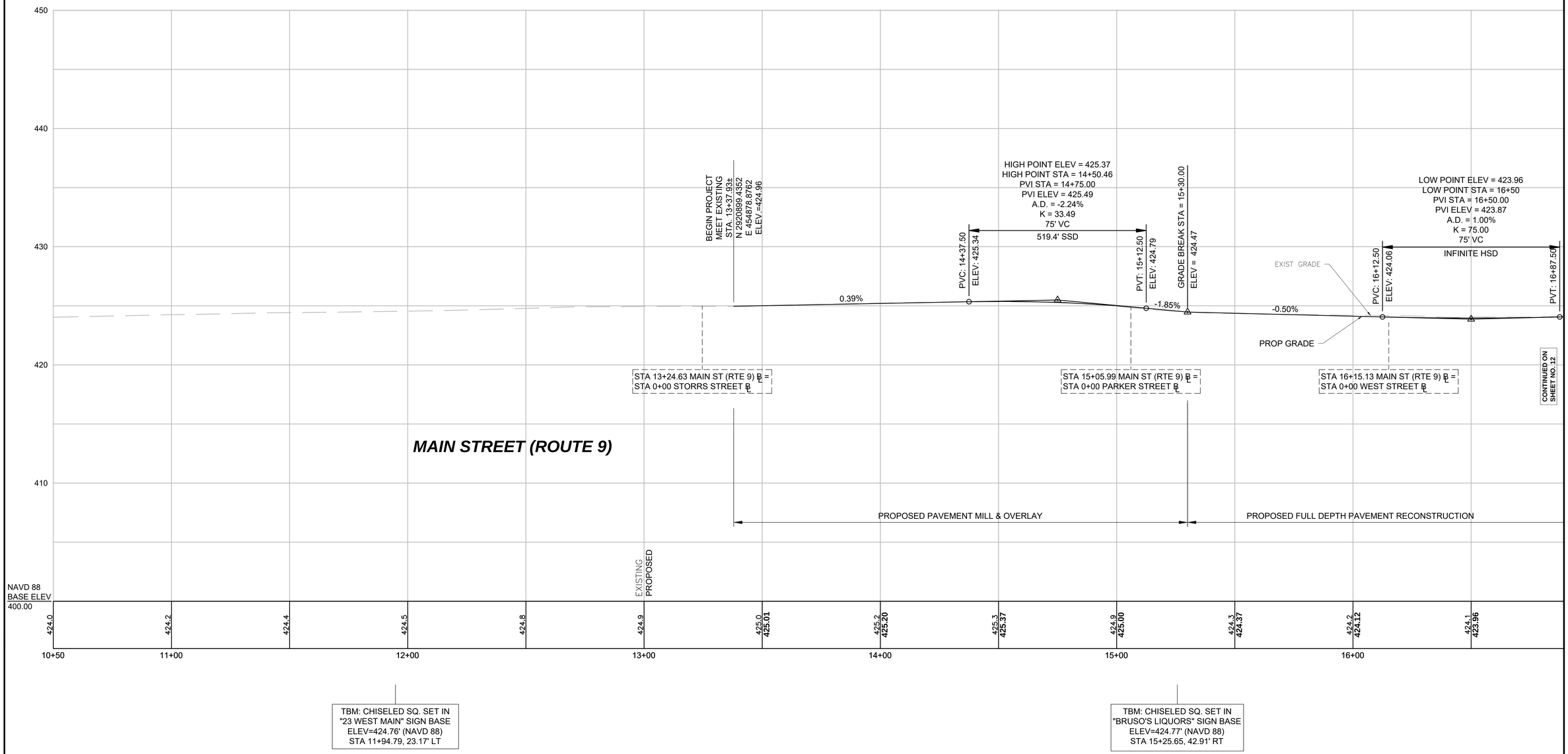


607987_HD(CP).DWG Plotted on 11-Jul-2019 9:03 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	11	81
PROJECT FILE NO.	607987		

MAIN STREET (ROUTE 9)
PROFILE - 1



TBM: CHISELED SQ. SET IN
"23 WEST MAIN" SIGN BASE
ELEV=424.76' (NAVD 88)
STA 11+94.79, 23.17' LT

TBM: CHISELED SQ. SET IN
"BRUSO'S LIQUORS" SIGN BASE
ELEV=424.77' (NAVD 88)
STA 15+25.65, 42.91' RT

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

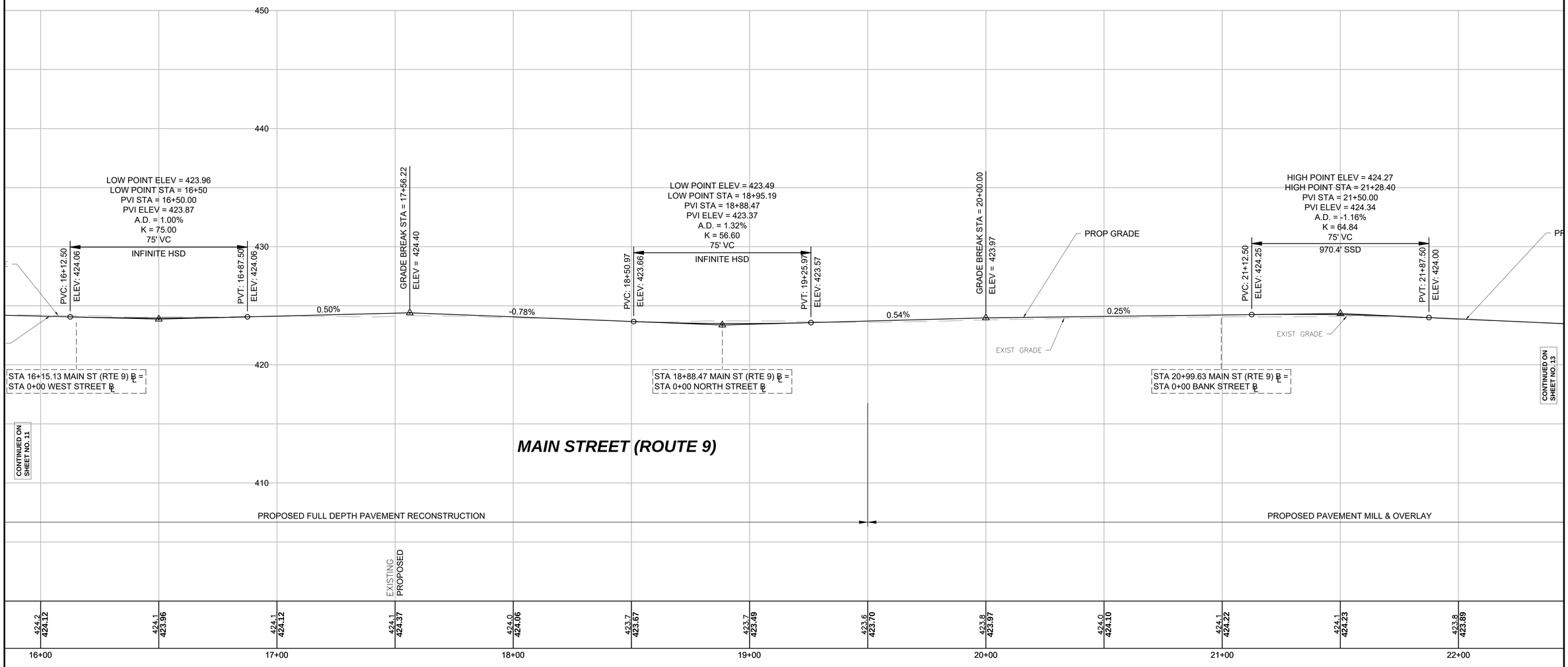
FOR CONSTRUCTION PLANS SEE SHEET 8

607987_HD(PROFILES).DWG Plotted on 11-Jul-2019 9:03 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	12	81
PROJECT FILE NO.	607987		

MAIN STREET (ROUTE 9)
PROFILE - 2



TBM: CHISELED SQ. SET AT
THE END OF RETAINING WALL
ELEV=424.01' (NAVD 88)
STA 17+75.98, 58.35' RT

TBM: SET LEFT OUTSIDE
CORNER OF GRANITE STEP
ELEV=426.10' (NAVD 88)
STA 20+72.84, 35.01' LT

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

FOR CONSTRUCTION PLANS SEE SHEET 9

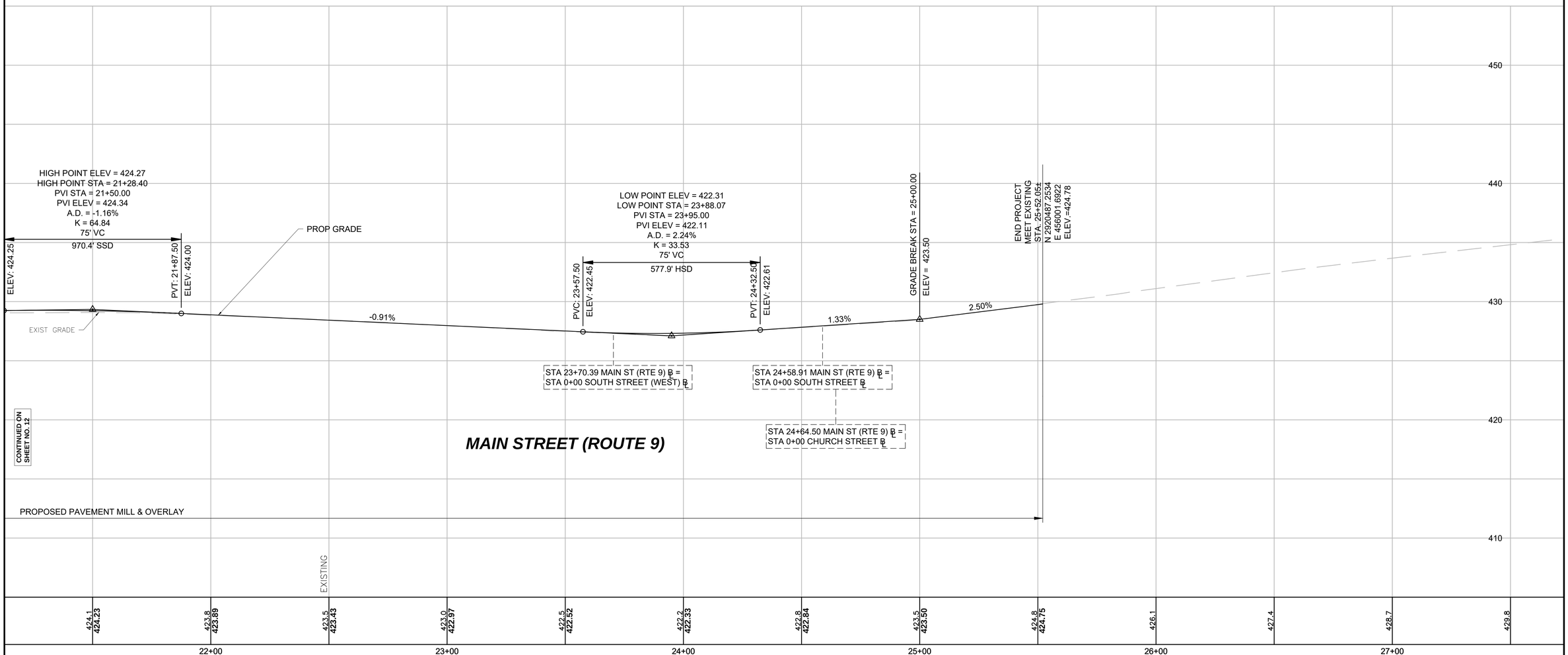
607987_HD(PROFILES).DWG Plotted on 11-Jul-2019 9:03 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	13	81
PROJECT FILE NO.	607987		

MAIN STREET (ROUTE 9)
PROFILE - 3

607987_HD(PROFILES).DWG Plotted on 11-Jul-2019 9:03 AM



BM: SET LEFT OUTSIDE CORNER
OF LOWEST GRANITE STEP
ELEV=423.70' (NAVD 88)
STA 23+18.91, 44.48' RT

TBM: SET LEFT FRONT
CORNER OF CENTER WINDOW
BAY ELEV=431.22' (NAVD 88)
STA 27+53.24, 32.36' LT

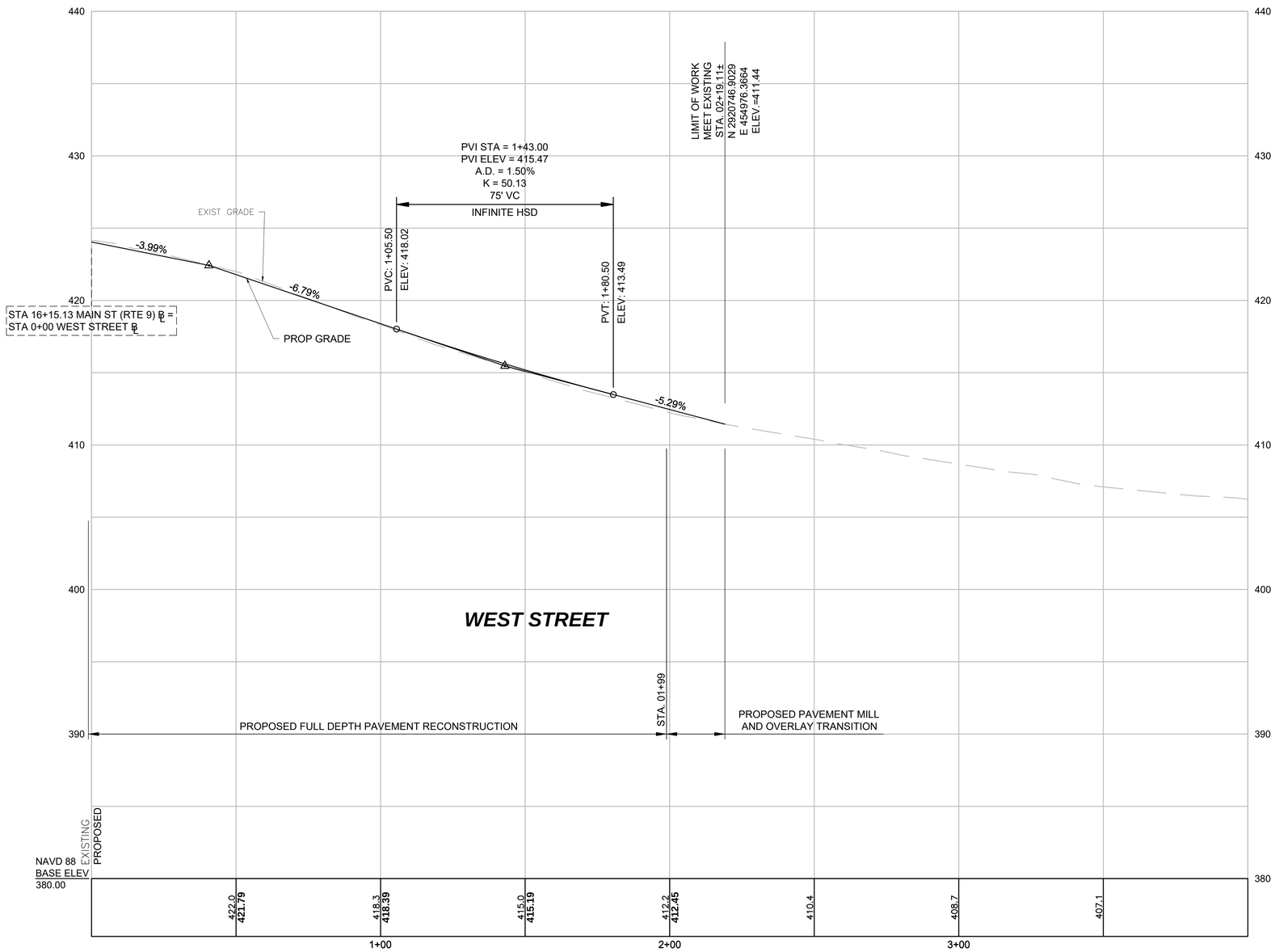
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

FOR CONSTRUCTION PLANS SEE SHEET 10

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	14	81
PROJECT FILE NO.	607987		

WEST STREET
PROFILE - 1



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

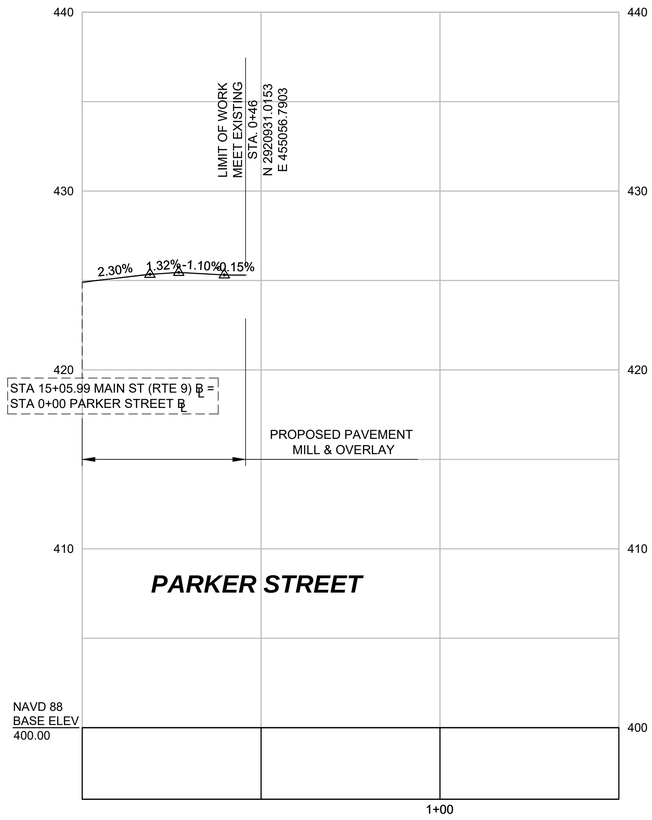
FOR CONSTRUCTION PLANS SEE SHEETS 8-9

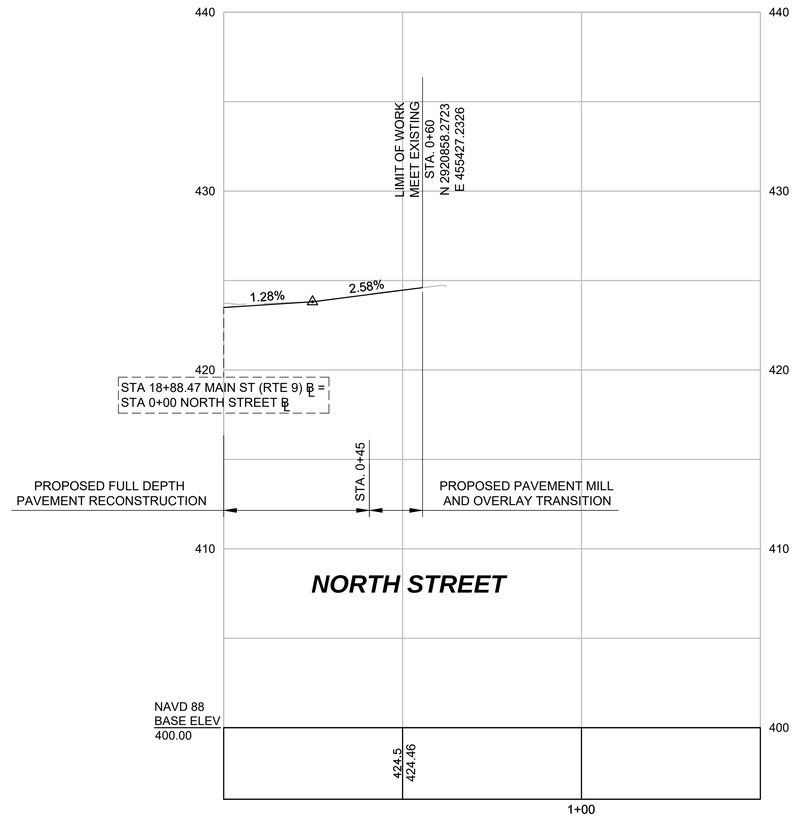
607987_HD(PROFILES).DWG Plotted on 11-Jul-2019 9:03 AM

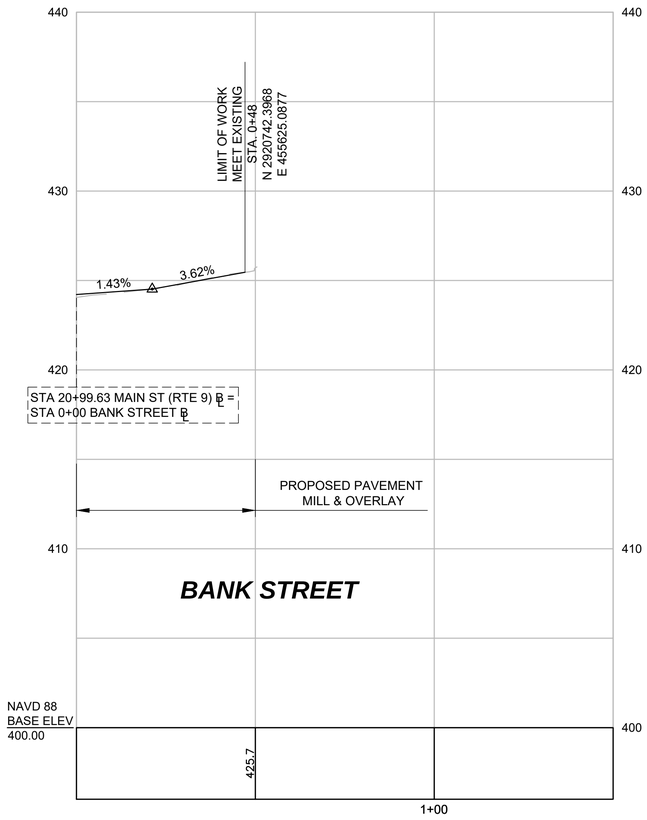
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	15	81
PROJECT FILE NO.	607987		

SIDE STREET PROFILES - 1







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

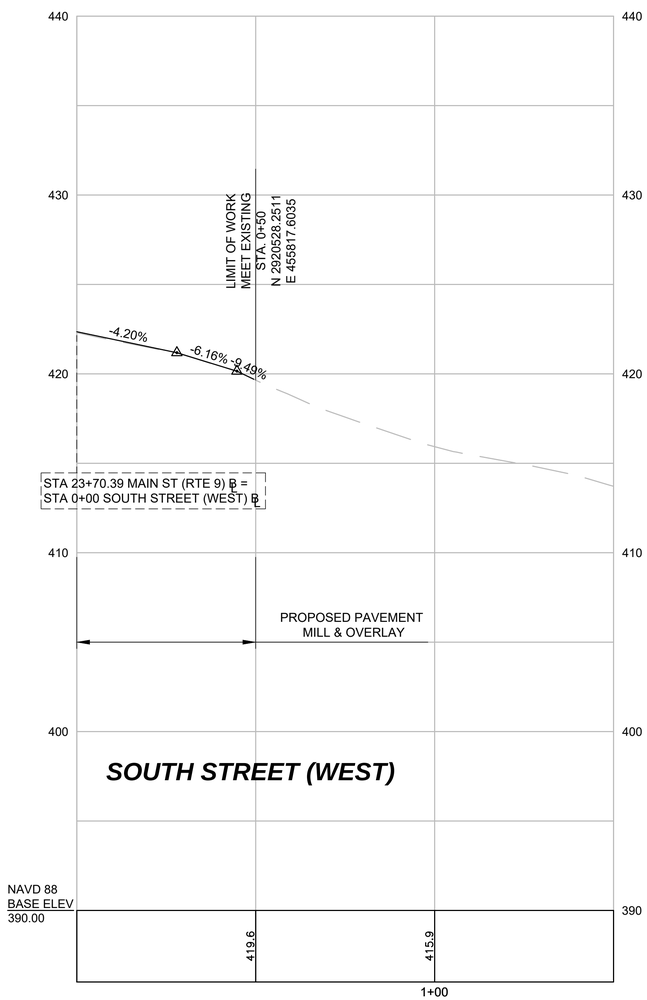
FOR CONSTRUCTION PLANS SEE SHEETS 8-9

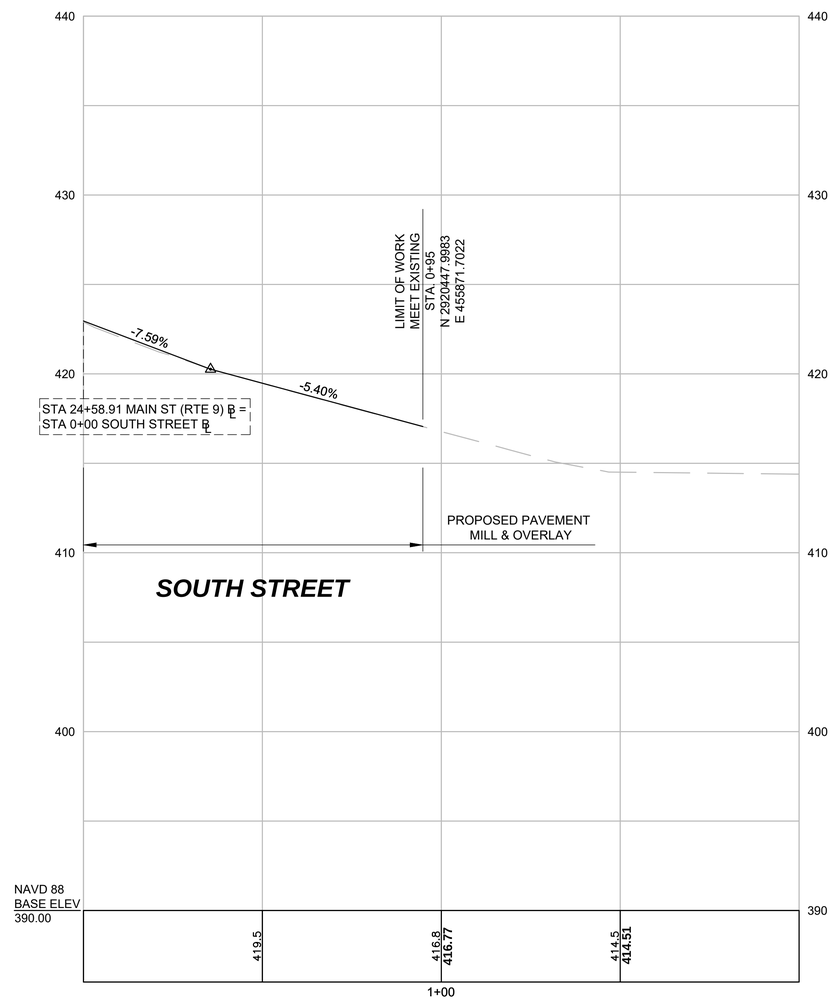
607987_HD(PROFILES).DWG Plotted on 11-Jul-2019 9:03 AM

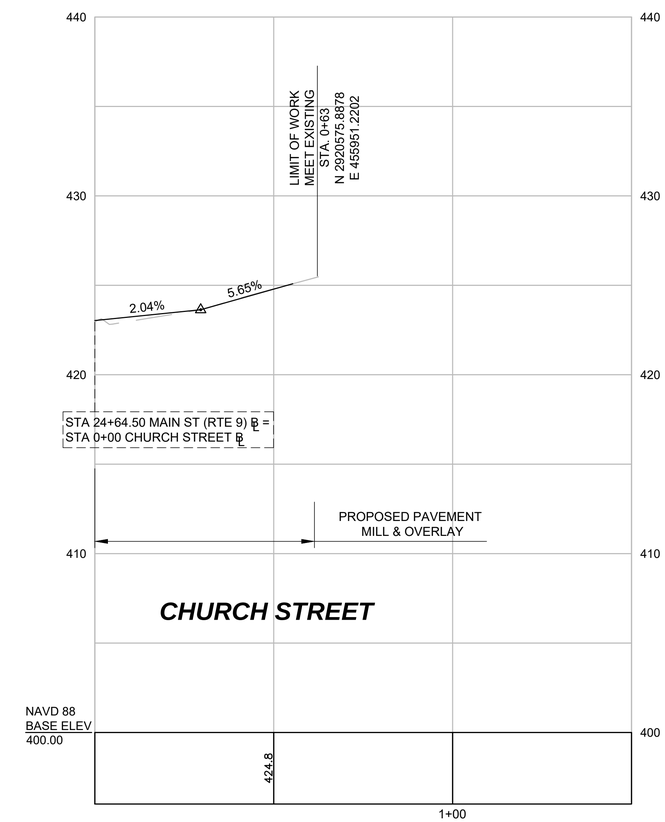
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	16	81
PROJECT FILE NO.	607987		

SIDE STREET PROFILES - 2







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

FOR CONSTRUCTION PLANS SEE SHEET 10

607987_HD(PROFILES).DWG Plotted on 11-Jul-2019 9:04 AM

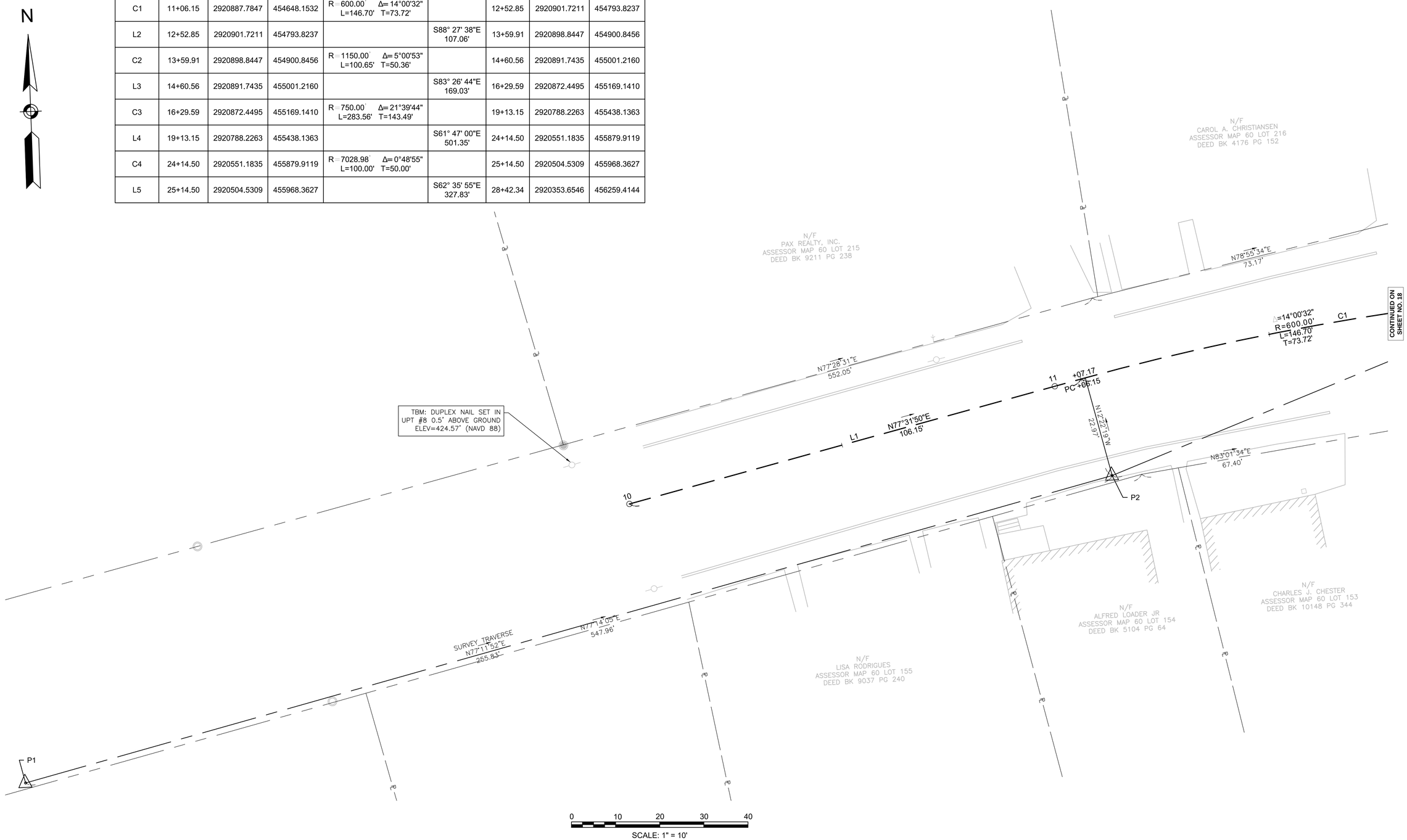
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	17	81
PROJECT FILE NO.	607987		

CURB TIE & GRADING PLAN - 1

MAIN STREET ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	2920864.8658	454544.5104		N77° 31' 50"E 106.15'	11+06.15	2920887.7847	454648.1532
C1	11+06.15	2920887.7847	454648.1532	R=600.00' Δ=14°00'32" L=146.70' T=73.72'		12+52.85	2920901.7211	454793.8237
L2	12+52.85	2920901.7211	454793.8237		S88° 27' 38"E 107.06'	13+59.91	2920898.8447	454900.8456
C2	13+59.91	2920898.8447	454900.8456	R=1150.00' Δ=5°00'53" L=100.65' T=50.36'		14+60.56	2920891.7435	455001.2160
L3	14+60.56	2920891.7435	455001.2160		S83° 26' 44"E 169.03'	16+29.59	2920872.4495	455169.1410
C3	16+29.59	2920872.4495	455169.1410	R=750.00' Δ=21°39'44" L=283.56' T=143.49'		19+13.15	2920788.2263	455438.1363
L4	19+13.15	2920788.2263	455438.1363		S61° 47' 00"E 501.35'	24+14.50	2920551.1835	455879.9119
C4	24+14.50	2920551.1835	455879.9119	R=7028.98' Δ=0°48'55" L=100.00' T=50.00'		25+14.50	2920504.5309	455968.3627
L5	25+14.50	2920504.5309	455968.3627		S62° 35' 55"E 327.83'	28+42.34	2920353.6546	456259.4144

SURVEY TRAVERSE DATA				
POINT	ELEVATION	NORTHING	EASTING	DESCRIPTION
1	422.97	2920808.8838	454404.5982	PK SET
2	423.99	2920865.5723	454654.0707	PK SET



607987_HD(CTG).DWG Plotted on 11-Jul-2019 9:04 AM

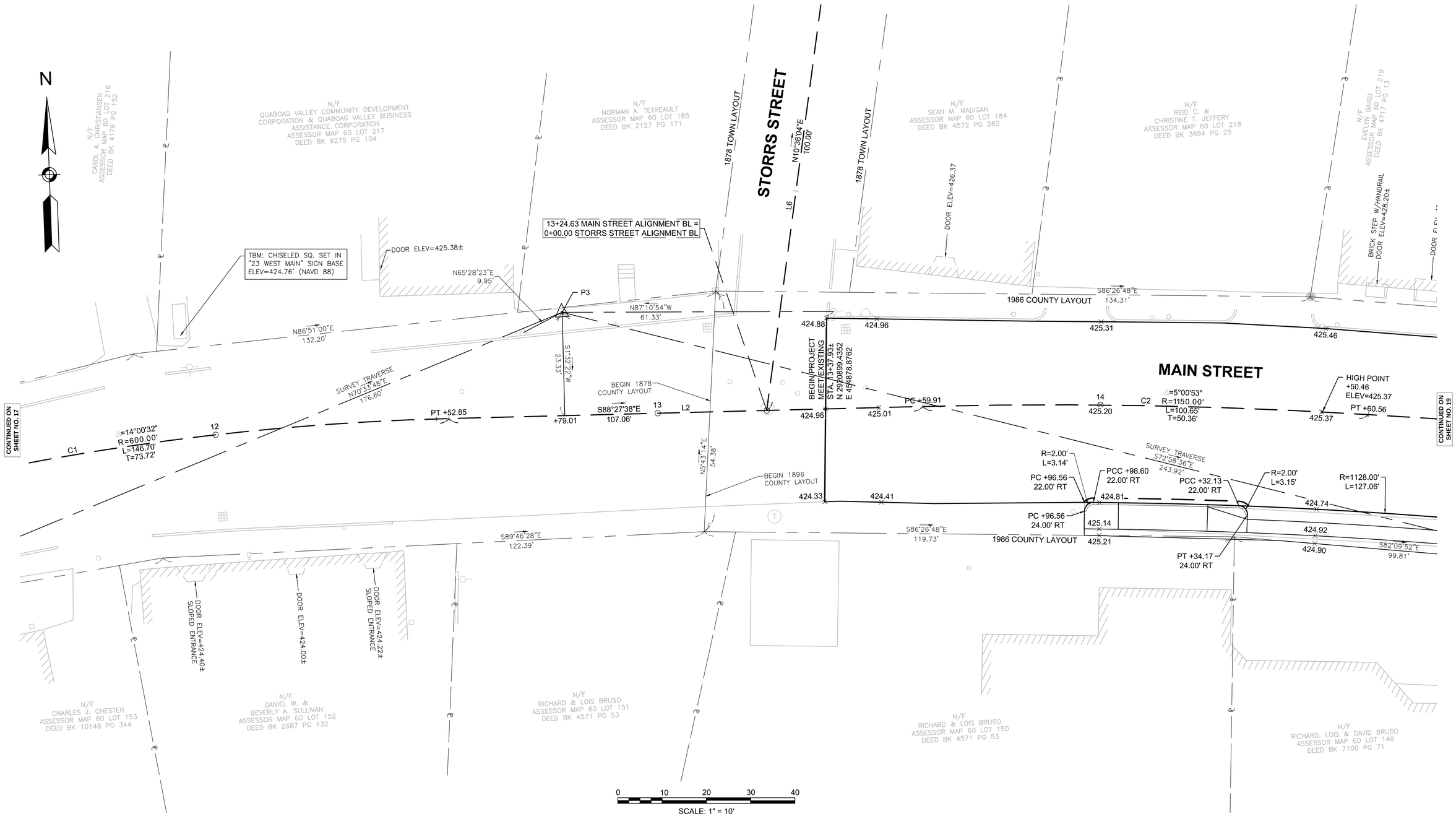
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	18	81
PROJECT FILE NO.	607987		

CURB TIE & GRADING PLAN - 2

STORRS STREET ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L6	0+00.00	2920899.7926	454865.5759		N10° 36' 04"E 100.00'	1+00.00	2920998.0862	454883.9731

SURVEY TRAVERSE DATA				
POINT	ELEVATION	NORTHING	EASTING	DESCRIPTION
3	425.20	2920924.3377	454820.6048	PK SET



607987_HD(CTG).DWG Plotted on 11-Jul-2019 9:04 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	19	81
PROJECT FILE NO.	607987		

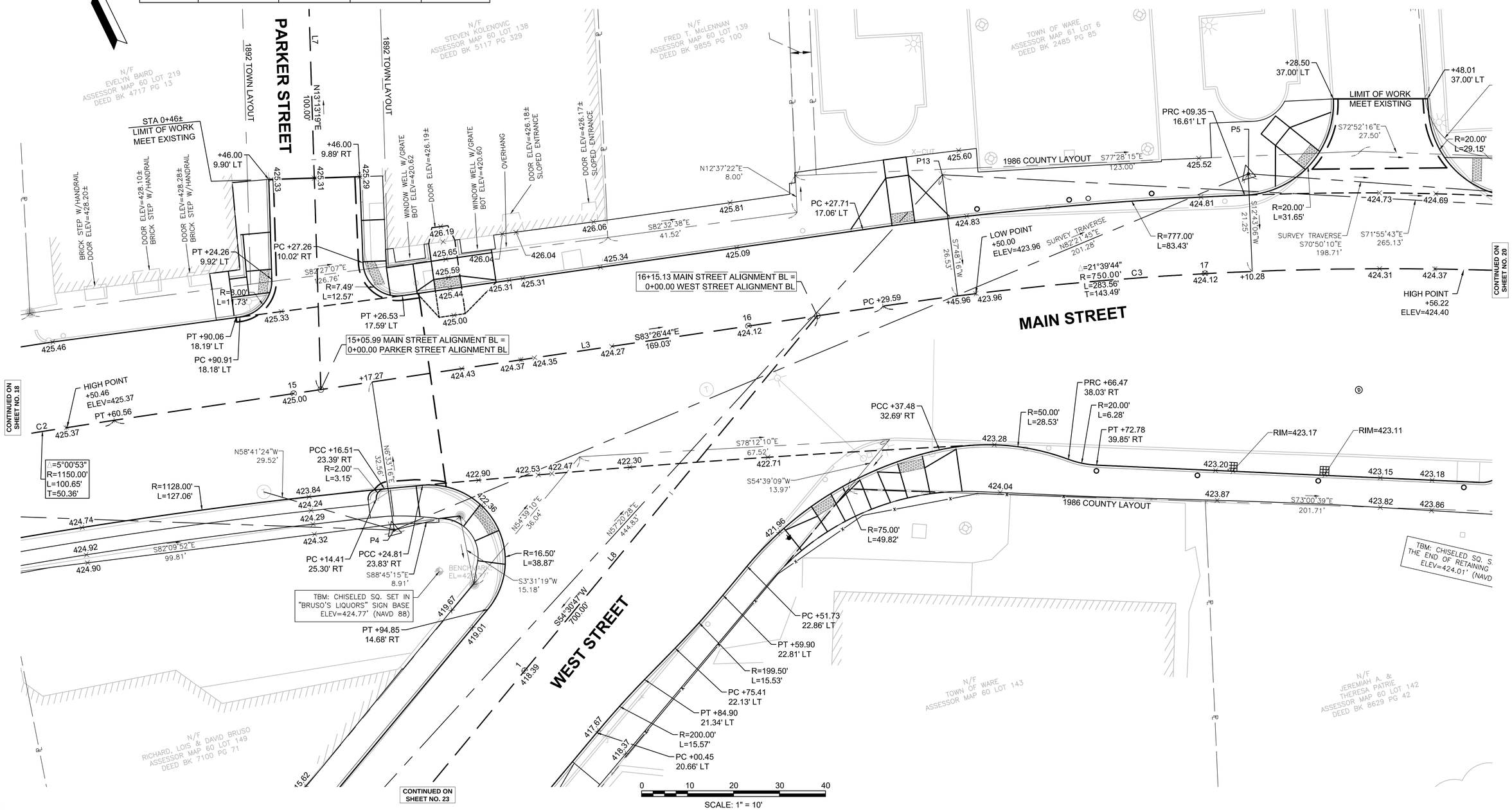
CURB TIE & GRADING PLAN - 3

607987_HD(CTG).DWG Plotted on 11-Jul-2019 9:04 AM

PARKER STREET ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L7	0+00.00	2920886.5583	455046.3452		N13° 13' 19"E 100.00'	1+00.00	2920983.9074	455069.2173

WEST STREET ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L8	0+00.00	2920874.0999	455154.7764		S54° 30' 47"W 700.00'	7+00.00	2920467.7384	454584.8024

SURVEY TRAVERSE DATA				
POINT	ELEVATION	NORTHING	EASTING	DESCRIPTION
4	424.12	2920852.9277	455053.8352	PK SET
5	425.56	2920879.6784	455253.3289	X CUT
13	425.53	2920896.6903	455188.9792	X CUT



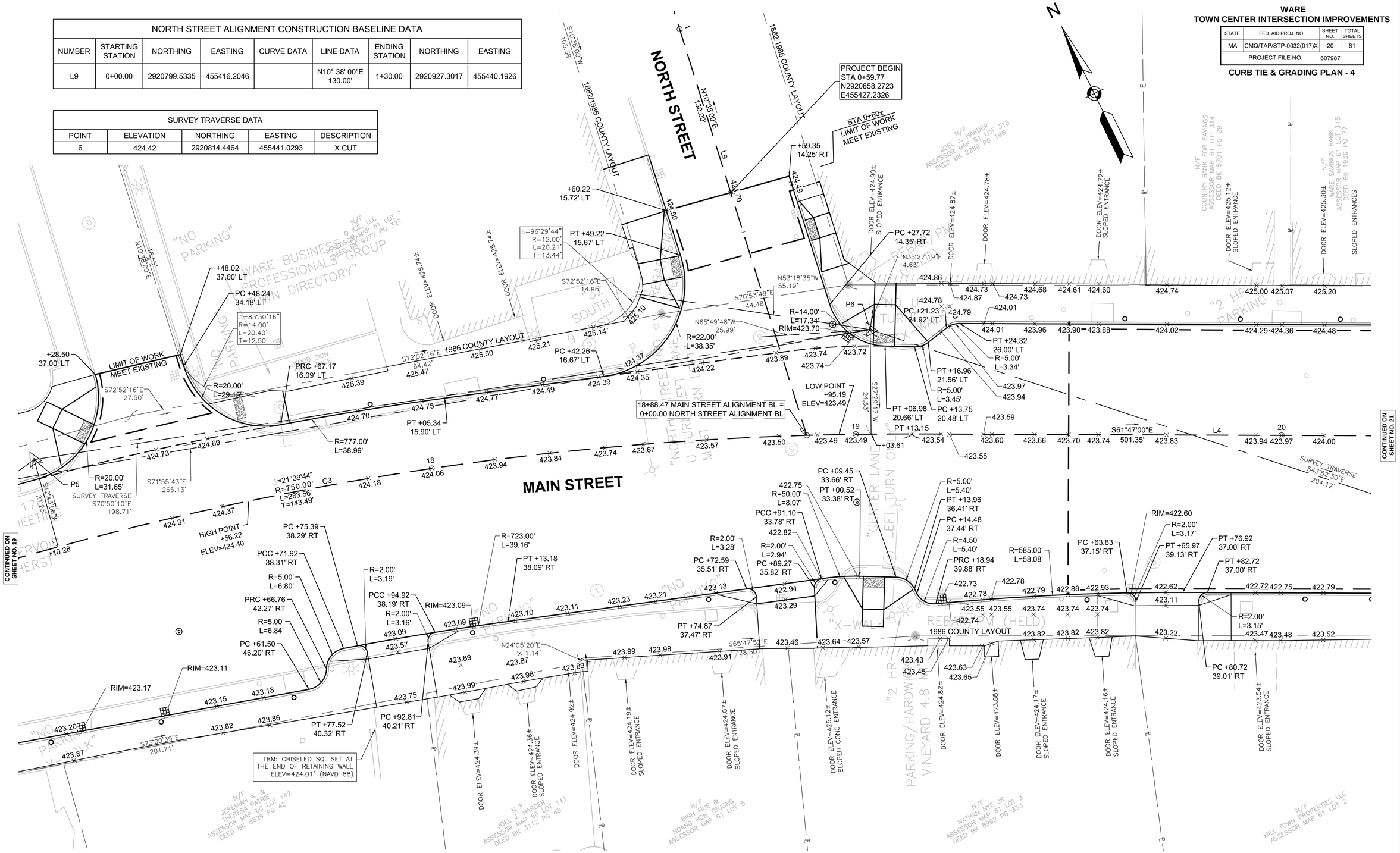
NORTH STREET ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L9	0+00.00	2920799.5335	455416.2046		N10° 38' 00"E 130.00'	1+30.00	2920927.3017	455440.1926

SURVEY TRAVERSE DATA				
POINT	ELEVATION	NORTHING	EASTING	DESCRIPTION
6	424.42	2920814.4464	455441.0293	X CUT

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	20	81
PROJECT FILE NO.	607987		

CURB TIE & GRADING PLAN - 4



607987_HD(CTG).DWG Plotted on 11-Jul-2019 9:04 AM

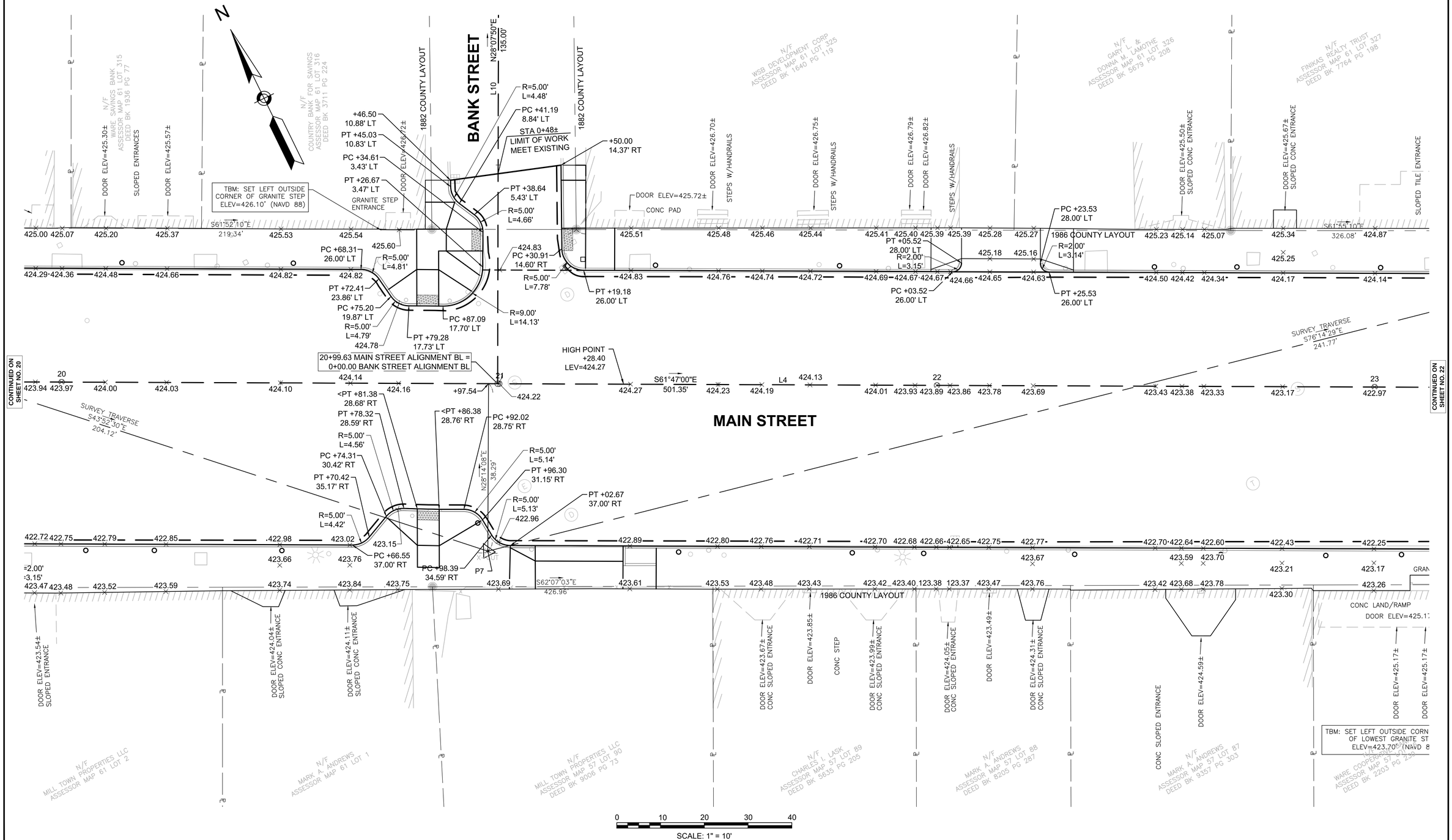
BANK STREET ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L10	0+00.00	2920700.0594	455602.4526		N28° 07' 50"E 135.00'	1+35.00	2920819.1123	455666.1024

SURVEY TRAVERSE DATA				
POINT	ELEVATION	NORTHING	EASTING	DESCRIPTION
7	423.53	2920667.3077	455582.4999	X CUT

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	21	81
PROJECT FILE NO.	607987		

CURB TIE & GRADING PLAN - 5



607987_HD(CTG).DWG Plotted on 11-Jul-2019 9:04 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	22	81
PROJECT FILE NO.	607987		

CURB TIE & GRADING PLAN - 6

607987_HD(CTG).DWG Plotted on 11-Jul-2019 9:04 AM

SOUTH STREET (WEST) ALIGNMENT CONSTRUCTION BASELINE DATA

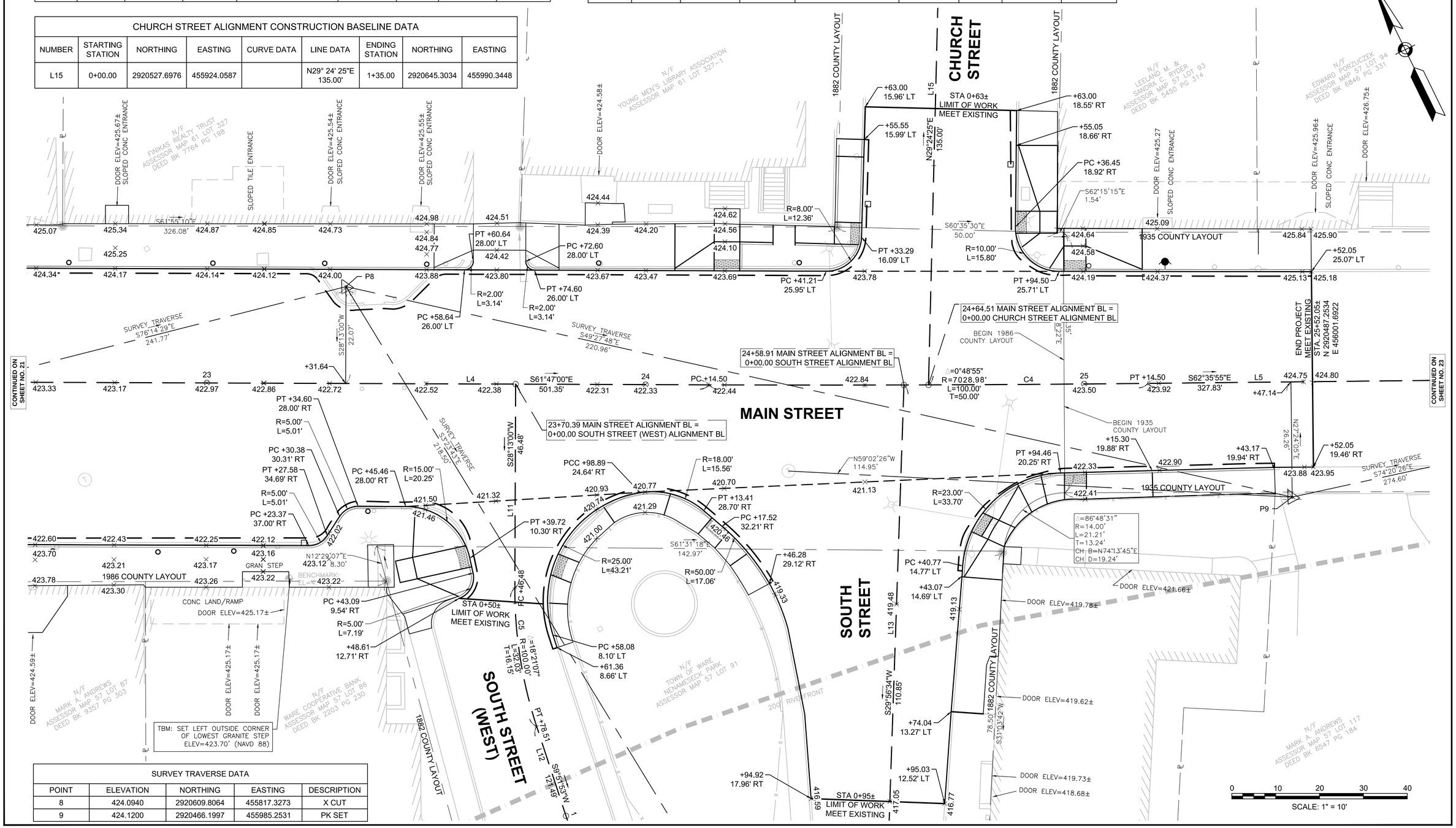
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L11	0+00.00	2920572.0400	455841.0417		S28° 13' 00"W 46.48'	0+46.48	2920531.0815	455819.0646
C5	0+46.48	2920531.0815	455819.0646	R=100.00' Δ=18°21'07" L=32.03' T=16.15'		0+78.51	2920500.9331	455808.6598
L12	0+78.51	2920500.9331	455808.6598		S9° 51' 53"W 121.49'	2+00.00	2920381.2416	455787.8462

SOUTH STREET ALIGNMENT CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L13	0+00.00	2920530.3081	455919.1141		S29° 56' 34"W 110.85'	1+10.85	2920434.2572	455863.7871
C6	1+10.85	2920434.2572	455863.7871	R=100.00' Δ=21°45'56" L=37.99' T=19.23'		1+48.83	2920398.5672	455851.4562
L14	1+48.83	2920398.5672	455851.4562		S8° 10' 38"W 141.17'	2+90.00	2920258.8361	455831.3776

CHURCH STREET ALIGNMENT CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L15	0+00.00	2920527.6976	455924.0587		N29° 24' 25"E 135.00'	1+35.00	2920645.3034	455990.3448



SURVEY TRAVERSE DATA

POINT	ELEVATION	NORTHING	EASTING	DESCRIPTION
8	424.0940	2920609.8064	455817.3273	X CUT
9	424.1200	2920466.1997	455985.2531	PK SET

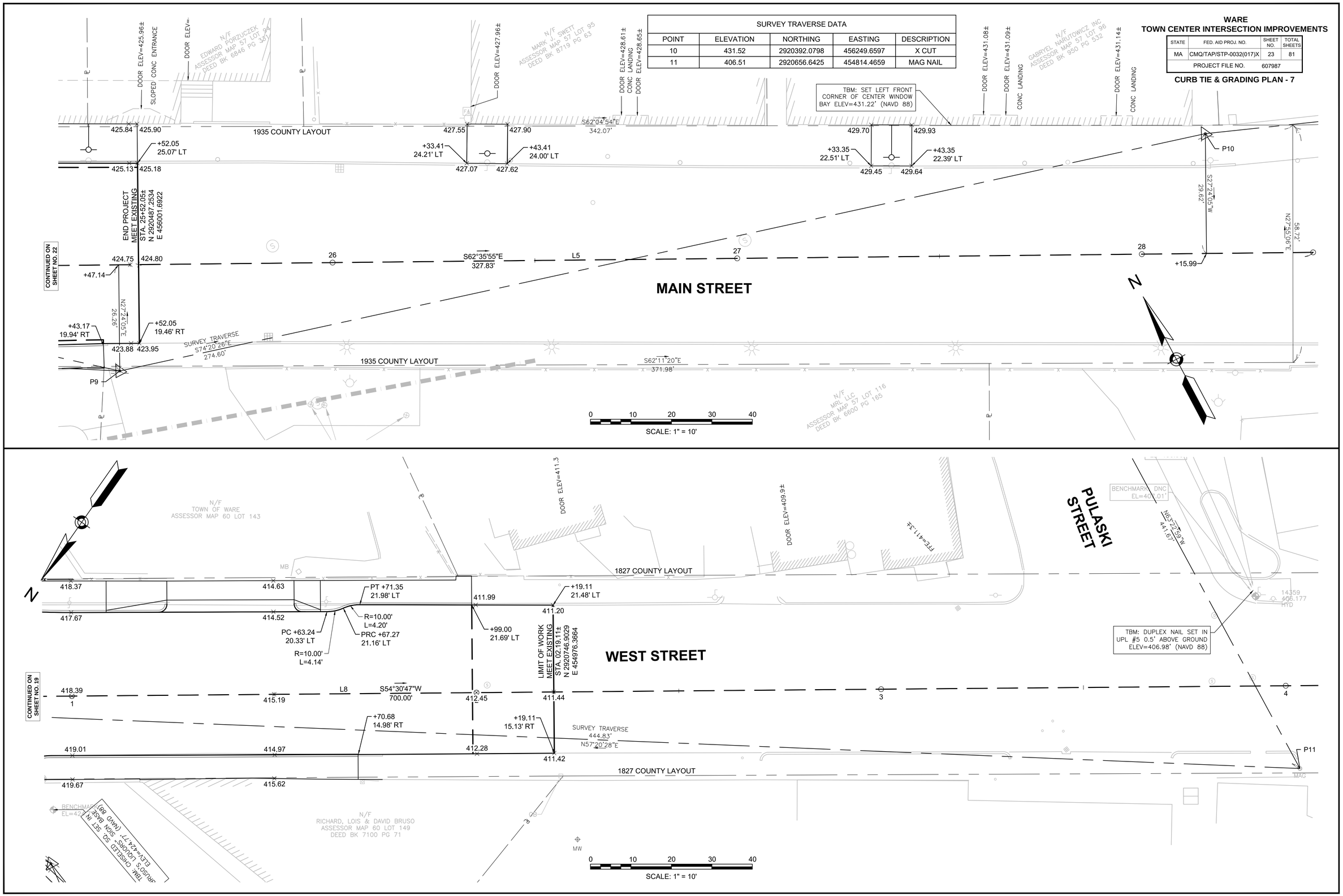
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	23	81
PROJECT FILE NO.	607987		

CURB TIE & GRADING PLAN - 7

SURVEY TRAVERSE DATA

POINT	ELEVATION	NORTHING	EASTING	DESCRIPTION
10	431.52	2920392.0798	456249.6597	X CUT
11	406.51	2920656.6425	454814.4659	MAG NAIL

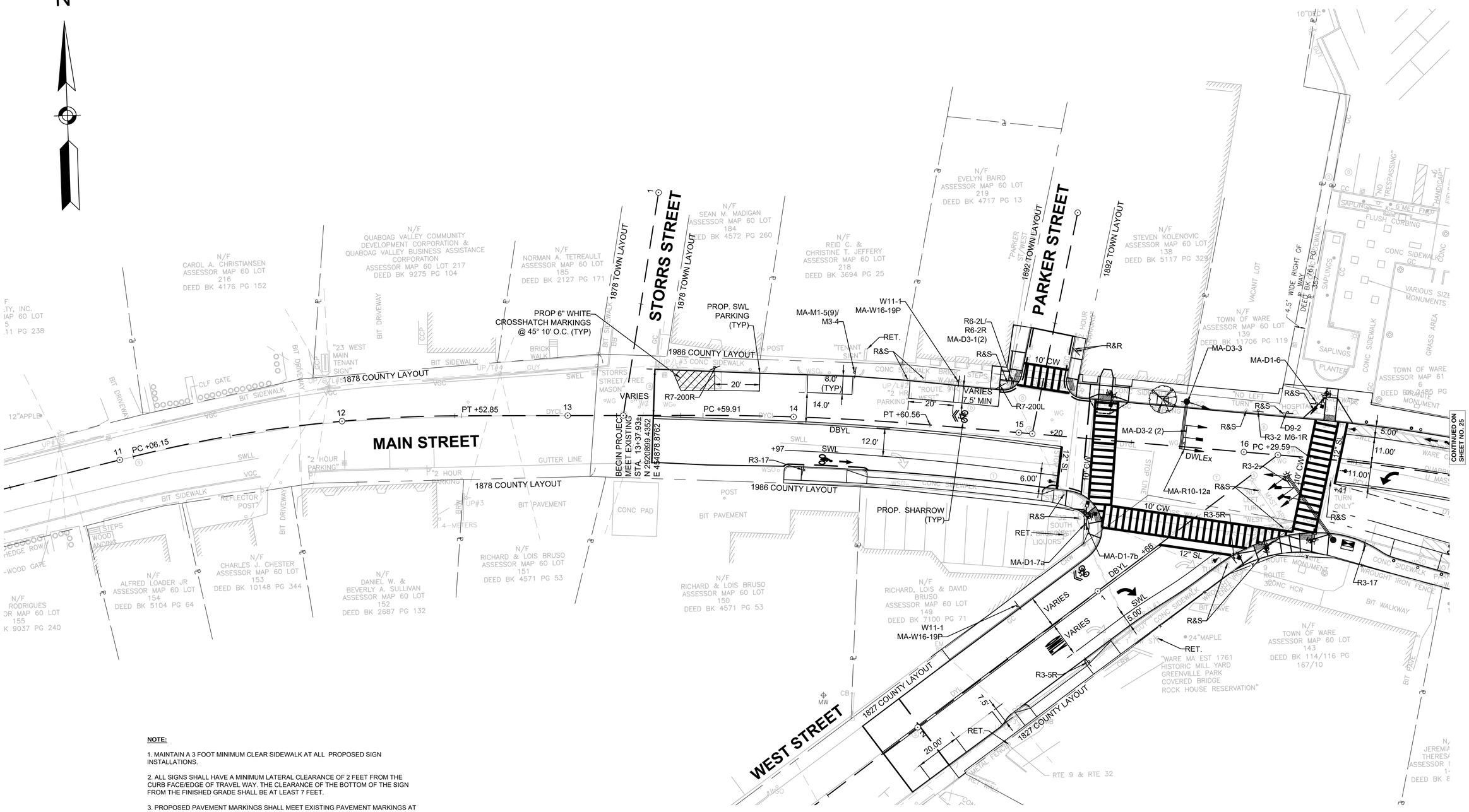


607987_HD(CTG).DWG Plotted on 11-Jul-2019 9:05 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	24	81
PROJECT FILE NO.	607987		

TRAFFIC SIGN & PAVEMENT MARKING PLAN - 1



NOTE:

1. MAINTAIN A 3 FOOT MINIMUM CLEAR SIDEWALK AT ALL PROPOSED SIGN INSTALLATIONS.

2. ALL SIGNS SHALL HAVE A MINIMUM LATERAL CLEARANCE OF 2 FEET FROM THE CURB FACE/EDGE OF TRAVEL WAY. THE CLEARANCE OF THE BOTTOM OF THE SIGN FROM THE FINISHED GRADE SHALL BE AT LEAST 7 FEET.

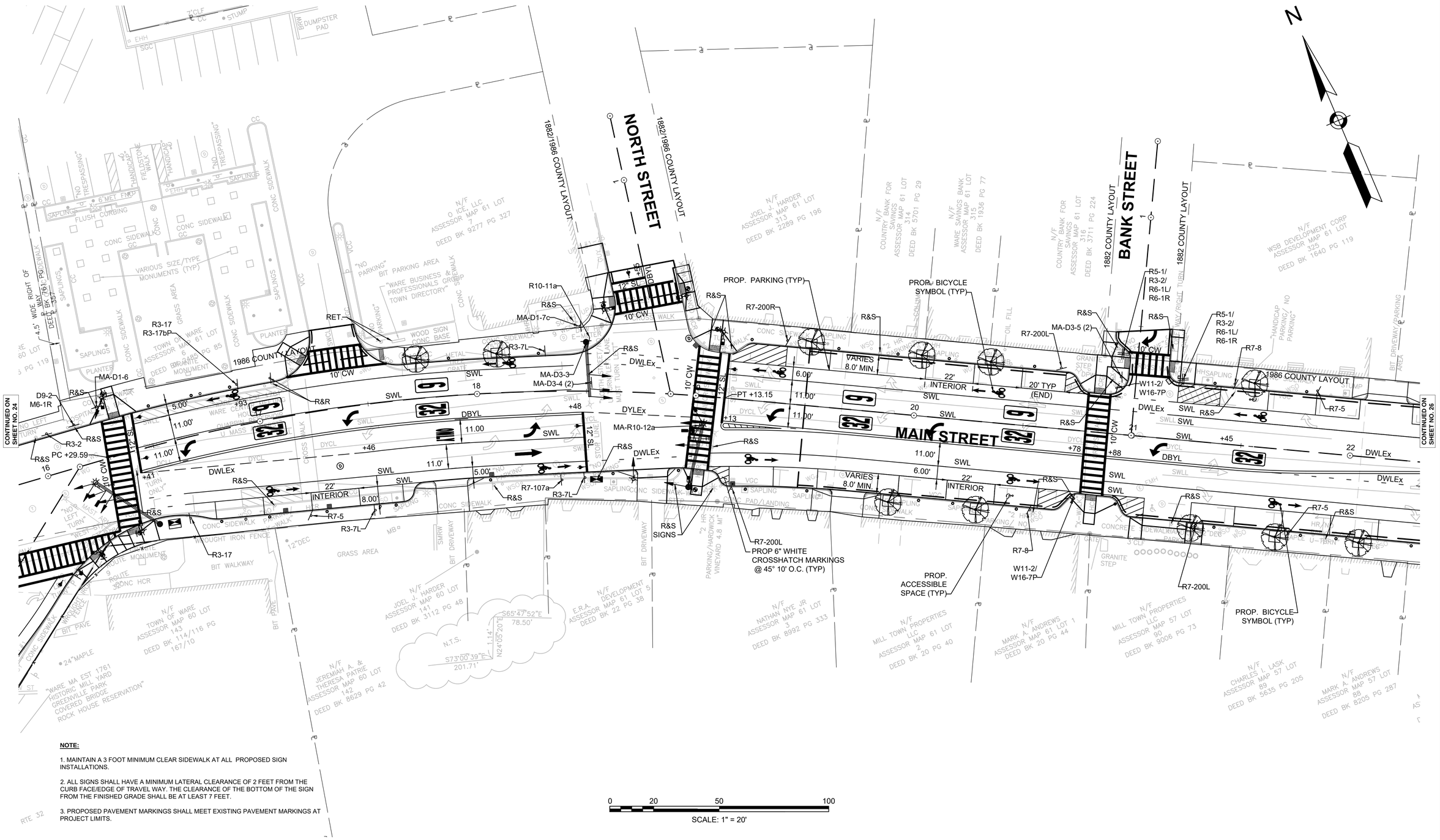
3. PROPOSED PAVEMENT MARKINGS SHALL MEET EXISTING PAVEMENT MARKINGS AT PROJECT LIMITS.

607987_TR(SIGN_STRIP).DWG Plotted on 11-Jul-2019 9:05 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	25	81
PROJECT FILE NO.	607987		

TRAFFIC SIGN & PAVEMENT MARKING PLAN - 2



NOTE:

1. MAINTAIN A 3 FOOT MINIMUM CLEAR SIDEWALK AT ALL PROPOSED SIGN INSTALLATIONS.

2. ALL SIGNS SHALL HAVE A MINIMUM LATERAL CLEARANCE OF 2 FEET FROM THE CURB FACE/EDGE OF TRAVEL WAY. THE CLEARANCE OF THE BOTTOM OF THE SIGN FROM THE FINISHED GRADE SHALL BE AT LEAST 7 FEET.

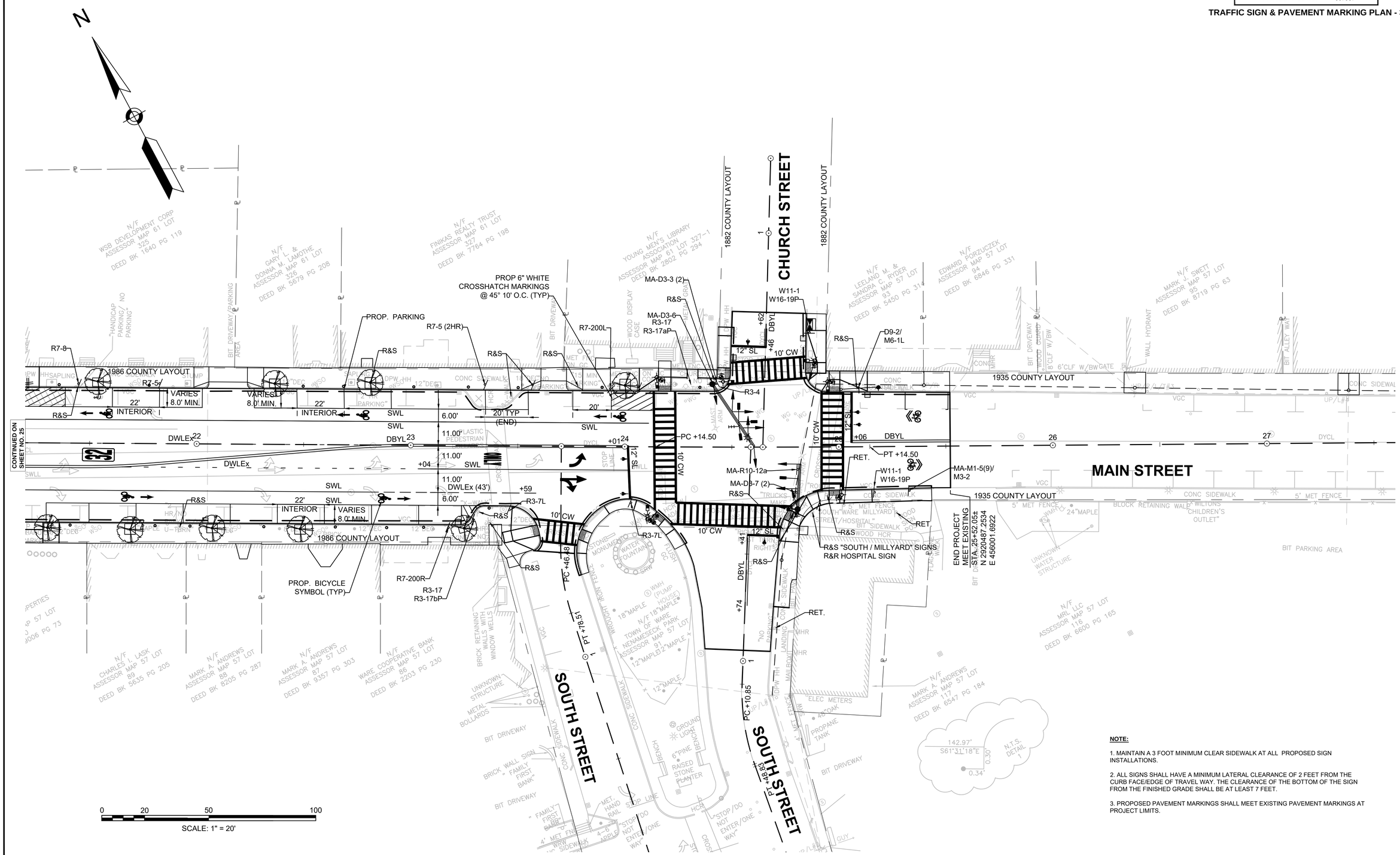
3. PROPOSED PAVEMENT MARKINGS SHALL MEET EXISTING PAVEMENT MARKINGS AT PROJECT LIMITS.

607987_TR(SIGN_STRIP).DWG Plotted on 11-Jul-2019 9:05 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	26	81
PROJECT FILE NO.	607987		

TRAFFIC SIGN & PAVEMENT MARKING PLAN - 3



NOTE:

1. MAINTAIN A 3 FOOT MINIMUM CLEAR SIDEWALK AT ALL PROPOSED SIGN INSTALLATIONS.

2. ALL SIGNS SHALL HAVE A MINIMUM LATERAL CLEARANCE OF 2 FEET FROM THE CURB FACE/EDGE OF TRAVEL WAY. THE CLEARANCE OF THE BOTTOM OF THE SIGN FROM THE FINISHED GRADE SHALL BE AT LEAST 7 FEET.

3. PROPOSED PAVEMENT MARKINGS SHALL MEET EXISTING PAVEMENT MARKINGS AT PROJECT LIMITS.

607987_TR(SIGN_STRIP).DWG Plotted on 11-Jul-2019 9:05 AM

TRAFFIC SIGN SUMMARY

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	27	81
PROJECT FILE NO.	607987		

TRAFFIC SIGN SUMMARY SHEET

IDENTIF-ICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE & NUMBER REQUIRED	UNIT AREA (SF)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW		BACKGROUND	LEGEND	BORDER			
R3-2	24"	24"		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			4	WHITE	RED / BLACK	BLACK	MOUNT W/R5-1 (2) MOUNT ON MAST ARM (1) P5 1	4.00	16.00
R3-4	24"	24"					1	WHITE	RED / BLACK	BLACK	P5 1	4.00	4.00
R3-5R	30"	36"	ONLY				2	WHITE	BLACK	BLACK	P5 2	7.50	15.00
R3-7L	30"	30"	LEFT LANE MUST TURN LEFT				5	WHITE	BLACK	BLACK	P5 5	6.25	31.25
R3-17	24"	18"	BIKE LANE				5	WHITE	BLACK	BLACK	P5 5	3.00	15.00
R3-17aP	24"	8"	AHEAD				1	WHITE	BLACK	BLACK	MOUNT W/ R3-17	1.33	1.33
R3-17bP	24"	8"	ENDS				3	WHITE	BLACK	BLACK	MOUNT W/ R3-17	1.33	3.99
R5-1	30"	30"	DO NOT ENTER				2	WHITE	RED	BLACK	P5 2	6.25	12.50
R6-1L	36"	12"	ONE WAY				2	WHITE	BLACK	BLACK	MOUNT W/R5-1 (1) MOUNT W/R6-1R (1)	3.00	6.00
R6-1R	36"	12"	ONE WAY				2	WHITE	BLACK	BLACK	MOUNT W/R5-1 (1) P5 (1) 1	3.00	6.00
R6-2L	24"	30"	ONE WAY				1	WHITE	BLACK	BLACK	MOUNT W/D3-1	5.00	5.00
R6-2R	24"	30"	ONE WAY				1	WHITE	BLACK	BLACK	MOUNT W/D3-1	5.00	5.00
R7-5	12"	18"	TWO HOUR PARKING				4	WHITE	GREEN	GREEN	P5 4	1.50	6.00
R7-8	12"	18"	RESERVED PARKING				2	WHITE	GREEN/ BLUE	GREEN	P5 2	1.50	3.00
R7-107a	12"	30"		PVTA STANDARD SIGN SHALL BE PROVIDED BY PVTA			1	WHITE	BLACK/ RED	RED	P5 1	2.50	2.50
R7-200L	24"	18"	TWO HOUR PARKING / NO PARKING ANY TIME	SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			5	WHITE	RED/ GREEN	RED	P5 5	3.00	15.00
R7-200R	24"	18"	NO PARKING ANY TIME / TWO HOUR PARKING				3	WHITE	RED/ GREEN	RED	P5 3	3.00	9.00
R10-11a	30"	36"	NO TURN ON RED				1	WHITE	BLACK	BLACK	MOUNT ON MAST ARM POLE	7.50	7.50

IDENTIF-ICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE & NUMBER REQUIRED	UNIT AREA (SF)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW		BACKGROUND	LEGEND	BORDER			
W11-1	30"	30"		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			4	FLUORESCENT YELLOW/GREEN	BLACK	BLACK	P5 4	6.25	25.0
W11-2	30"	30"					2	FLUORESCENT YELLOW/GREEN	BLACK	BLACK	P5 2	6.25	25.0
W16-7P	24"	12"					2	FLUORESCENT YELLOW/GREEN	BLACK	BLACK	MOUNT W/ W11-2	2.0	4.0
MA-W16-19P	30"	24"	ON ROADWAY	SEE MASSDOT STANDARD SIGNS A SUPPLEMENT TO FHWA'S STANDARD HIGHWAY SIGNS AND MARKINGS AND THE MASSACHUSETTS AMENDMENTS TO THE MUTCD			4	FLUORESCENT YELLOW/GREEN	BLACK	BLACK	MOUNT W/ W11-1	5.0	20.0
MA-M1-5(9)	24"	24"	9				2	WHITE	BLACK	BLACK	MOUNT W/ M3-2 (1) M3-4(1)	4.00	8.00
MA-R10-12a	30"	36"	LEFT TURN YIELD ON FLASHING				3	WHITE	BLACK / YELLOW	BLACK	MOUNT ON MAST ARM	7.50	22.50
M3-2	24"	12"	EAST	SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			1	WHITE	BLACK	BLACK	MOUNT W/ M1-5(9)	2.00	2.00
M3-4	24"	12"	WEST				1	WHITE	BLACK	BLACK	MOUNT W/ M1-5(9)	2.00	2.00
M6-1L	21"	15"					1	BLUE	WHITE	WHITE	MOUNT W/ D9-2	2.20	2.20
M6-1R	21"	15"					1	BLUE	WHITE	WHITE	MOUNT W/ D9-2	2.20	2.20
MA-D3-1	40"	12"	Parker St	6D / 4D	3 3	N/A	2	GREEN	WHITE	WHITE	P5 1	3.33	6.66
MA-D3-2	42"	18"	West St	8D / 5.33D	5 5	N/A	2	GREEN	WHITE	WHITE	MOUNT ON MAST ARM	5.25	10.50
MA-D3-3	42"	18"	Main St	8D / 5.33D	5 5	N/A	5	GREEN	WHITE	WHITE	MOUNT ON MAST ARM(3)/ R3-4 (2)	5.25	26.25
MA-D3-4	48"	18"	North St	8D / 5.33D	5 5	N/A	2	GREEN	WHITE	WHITE	MOUNT ON MAST ARM	6.00	12.00
MA-D3-5	36"	12"	Bank St	6D / 4D	3 3	N/A	2	GREEN	WHITE	WHITE	P5 1	3.00	6.00
MA-D3-6	54"	18"	Church St	8D / 5.33D	5 5	N/A	2	GREEN	WHITE	WHITE	MOUNT ON MAST ARM	6.75	13.50
MA-D3-7	48"	18"	South St	8D / 5.33D	5 5	N/A	2	GREEN	WHITE	WHITE	MOUNT ON MAST ARM	6.00	12.00
D9-2	24"	24"	H	SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			1	BLUE	WHITE	WHITE	MOUNT W/ D9-2	4.00	4.00

NOTE: D3 SIGNS TO BE MOUNTED ON MAST ARM SHALL BE BOLTED.
STREET NAME SIGNS MOUNTED ON GROUND POSTS SHALL BE MOUNTED BACK TO BACK AND BOLTED, MAST ARM MOUNTED POSTS WILL BE PRINTED ON BOTH SIDES AND CANTILEVERED.

607987_TR(SIGN_SUMMARY).DWG Plotted on 11-Jul-2019 11:23 AM

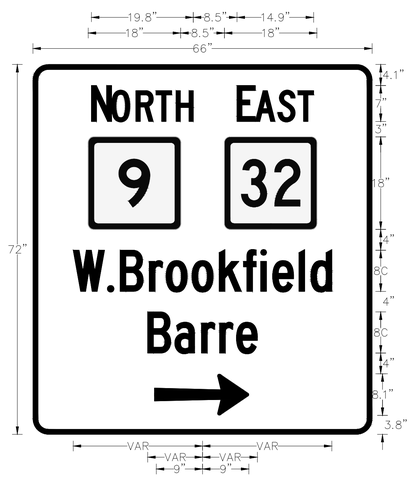
TRAFFIC SIGN SUMMARY

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

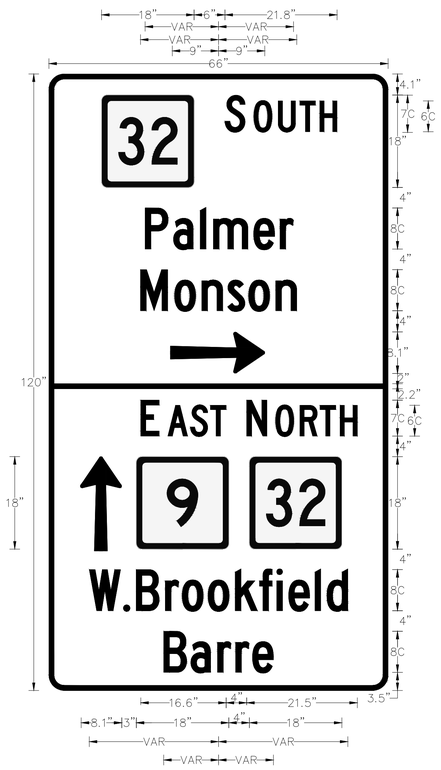
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	28	81
PROJECT FILE NO.	607987		

TRAFFIC SIGN SUMMARY SHEET

MA–D1–6		
5.50'	6.00'	33.00 SF
BACKGROUND	LEGEND	BORDER
GREEN REFL.	SILVER WHITE	SILVER WHITE

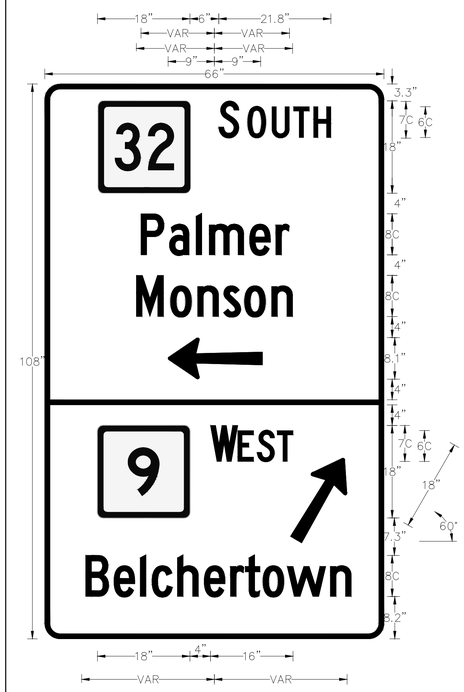


MA–D1–7a		
5.50'	10.00'	55.00 SF
BACKGROUND	LEGEND	BORDER
GREEN REFL.	SILVER WHITE	SILVER WHITE

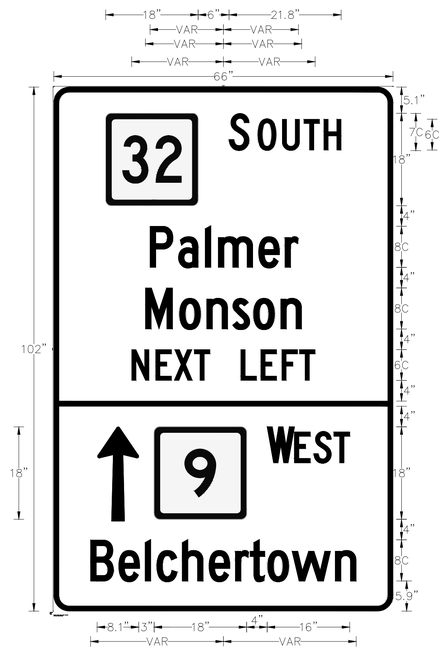


* MOUNT WITH MA–D1–7b

MA–D1–7b		
5.50'	9.00'	49.50 SF
BACKGROUND	LEGEND	BORDER
GREEN REFL.	SILVER WHITE	SILVER WHITE



MA–D1–7c		
5.50'	8.50'	46.75 SF
BACKGROUND	LEGEND	BORDER
GREEN REFL.	SILVER WHITE	SILVER WHITE



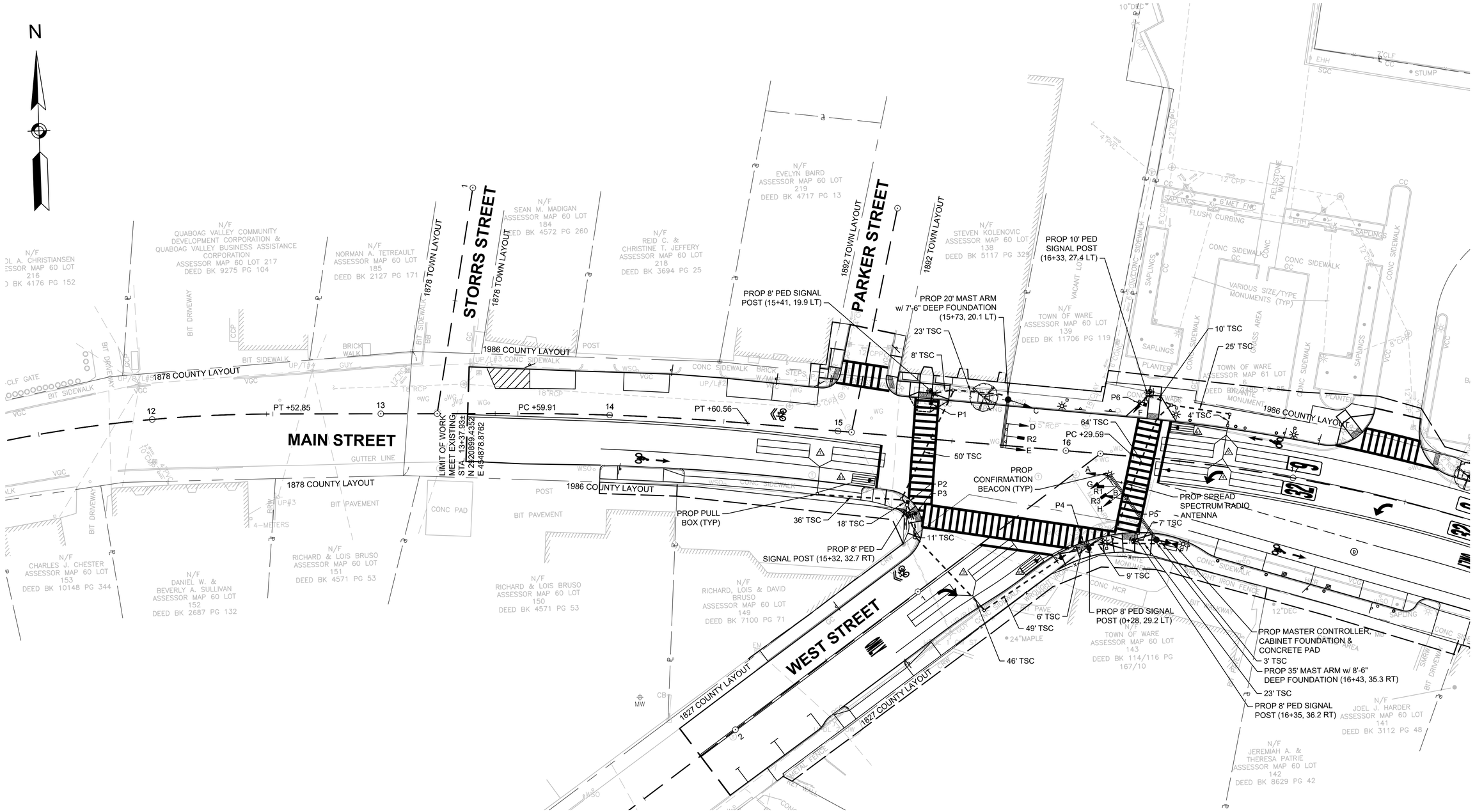
SHEET SUMMARY
TOTAL AREA OF SIGNS
184.25 SF

607987_TR(SIGN_SUMMARY).DWG Plotted on 11-Jul-2019 11:23 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	29	81
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL PLAN - 1

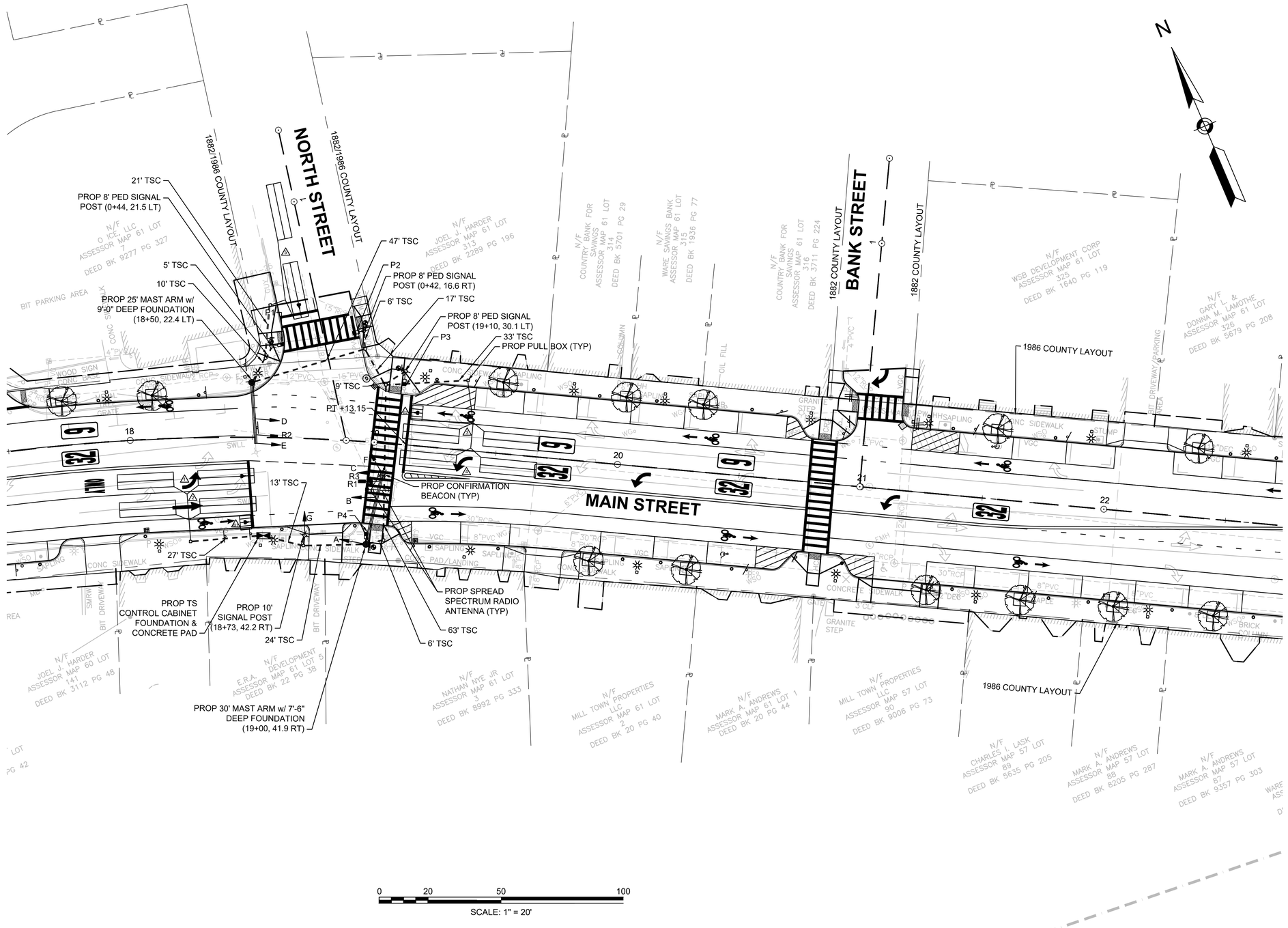


607987_TR(SIGNAL_PLANS).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	30	81
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL PLAN - 2

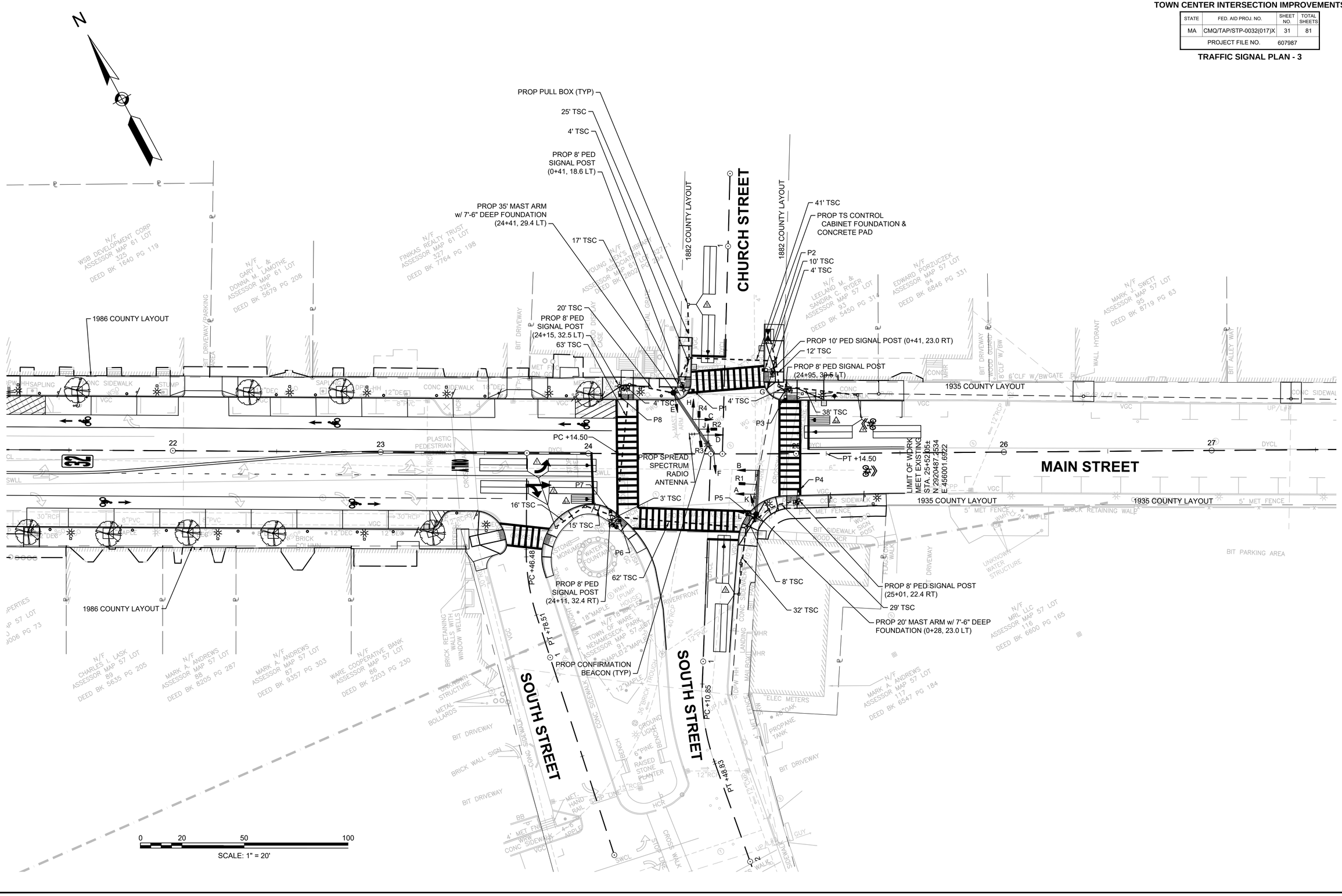


607987_TR(SIGNAL_PLANS).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	31	81
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL PLAN - 3

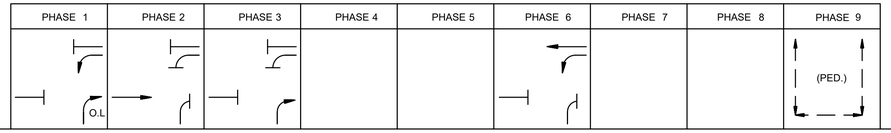


607987_TR(SIGNAL_PLANS).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	32	78
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL DATA
MAIN STREET @ WEST STREET



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

STREET	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH OPER.
MAIN STREET	EB	A,B	R	R	R	G	Y	R	R	R	R							R	R	R							R	R	R	FY
MAIN STREET	WB	C,D	R	R	R	R	R	R	G	Y	R							G	Y	R							R	R	R	FY
MAIN STREET	WB	E	GL	YL	1	RL	RL	RL	RL	RL	RL							FYL	YL	1							RL	RL	RL	FYL
WEST STREET	NB	F,G,H	GR	YR	RR	RR	RR	RR	GR	2	3							RR	RR	RR							RR	RR	RR	FRR
PEDESTRIAN	ALL		DW	DW	DW	DW	DW	DW	DW	DW	DW							DW	DW	DW							W	FDW	DW	OUT

TIMING IN SECONDS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
MINIMUM GREEN (INITIAL)	10			10			6									10												EMERGENCY ONLY
PASSAGE TIME (VEHICLE)	3			3			3									3												
MAXIMUM 1 (FREE)	53			25												80												
MAXIMUM 2																												
YELLOW CLEARANCE		3.5			3.5			3.5									3.5											
RED CLEARANCE			3			3			2									3										
WALK (W)																									7			
PEDESTRIAN CLEARANCE																										17	3	
RECALL	SOFT			OFF			OFF									SOFT									OFF			
MEMORY	NON-LOCK			NON-LOCK			NON-LOCK									NON-LOCK									LOCK			

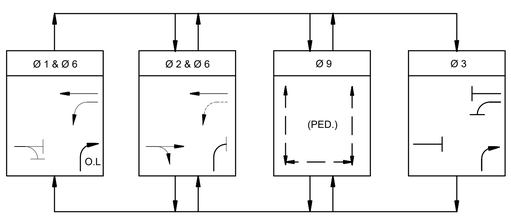
COORDINATION DATA			COORDINATION PHASE TIMING								
TIMING PLAN	CYCLE LENGTH	REF / OFFSET	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.
A.M.	100	0	68	32				100			
P.M., SAT,SUN,HOLIDAY	100	0	72	28				100			

NOTES:

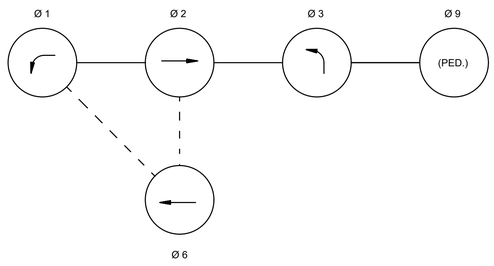
1. COORDINATION AM, 6AM TO 12PM M-F
2. COORDINATION PM, 12PM TO 9PM, M-F
3. COORDINATION SAT, SUN, HOLIDAY 8AM TO 9PM
4. FREE OPERATION ALL OTHER TIMES

(1) FYL OR RL
(2) GR IF Ø1 & Ø6 FOLLOW, YR IF Ø2 & Ø6 FOLLOW
(3) GR IF Ø1 & Ø6 FOLLOW, RR IF Ø2 & Ø6 FOLLOW

PREFERENTIAL PHASING SEQUENCE



NEMA DUAL RING PHASING NOTES:



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

FIRE PREEMPTION SCHEDULE

APPROACH	PREEMPTION PHASE	NEXT PHASE CALLED
EASTBOUND R1	2	2+6
WESTBOUND R2	1+6	2+6
NORTHBOUND R3	3	1+6

EMERGENCY VEHICLE PREEMPTION OPERATION:

1. EMERGENCY VEHICLE PREEMPTION SHALL BE ACTUATED BY AN OPTICAL SIGNAL FROM AN OPTICAL EMITTER MOUNTED ON AN EMERGENCY VEHICLE AND RECEIVED BY AN OPTICAL DETECTOR LOCATED AT INTERSECTION. A SEPARATE RECEIVING DETECTOR IS REQUIRED FOR EACH DETECTED APPROACH.
2. PREEMPTION SIGNALS FROM MULTIPLE APPROACHES SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL TIME THE CLEARANCE INTERVALS OF THE ACTIVE PHASE (IF DIFFERENT THAT TO BE SERVICED) AND ADVANCE TO AND/OR HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME CLEARANCES AND SIMILARLY SERVICE OTHER EMERGENCY VEHICLE PREEMPTION SEQUENCES IN THE ORDER RECEIVED (IF RECEIVED) OTHERWISE, RESUME NORMAL PREFERENTIAL PHASE SEQUENCE.
4. PREEMPTION MINIMUM GREENS SHALL BE TEN SECONDS.
5. NORMAL CLEARANCES SHALL BE PROVIDED ON PHASES THAT ARE TERMINATED BY PREEMPTION DEMAND.
6. ACTUAL TIMMING FOR PREEMPTION SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE FIRE DEPARTMENT AND SHALL BE APPROVED BY MASSDOT PRIOR TO OPERATION.

MAJOR ITEMS REQUIRED

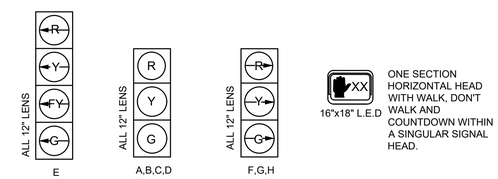
PAY ITEM	QUANTITY	ITEM
	1	CONTROLLER NEMA 8 PHASE TS2-TYPE 1 (MASTER) CAB&FDN, W/ CONC PAD
	1	SERVICE CONNECTION
	4	8' SIGNAL POLE BASE & FDN
	1	10' SIGNAL POLE BASE & FDN
	1	20' TYPE II, GALV. STEEL MAST ARM ASSEMBLY, BASE & FDN
	1	35' TYPE II, GALV. STEEL MAST ARM ASSEMBLY, BASE & FDN
	7	1-WAY 3 SECTION SIGNAL HOUSING (12" LED)
	1	1-WAY 4 SECTION SIGNAL HOUSING (12" LED)
815.1	6	PEDESTRIAN SIGNAL HEADS 16" x 18" LED W/ COUNTDOWN DISPLAY
	6	PEDESTRIAN PUSH BUTTONS, W/ R10-3E SIGNS, & APS ASSEMBLY
	3	PRE-EMPTION RECEIVER - SINGLE CHANNEL
	2	PRE-EMPTION PHASE SELECTION MODUAL - DUAL CHANNEL
	1	CARD RACK
	1	CONFIRMATION STROBE (WHITE)
	4	DUAL CHANNEL LOOP DETECTOR AMPLIFIER
	8	ROADWAY LOOP DETECTORS 23'X6'
	3	ROADWAY BIKE LOOP DETECTOR 10'X4'
	1	SPREAD SPECTRUM RADIO FOR COORDINATION
	1	SPREAD SPECTRUM RADIO ANTENNA
		Plus all necessary duct, cable, labor, miscellaneous
		material and equipment to complete the installation.

LOOP DETECTOR DATA

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

DETECTOR NUMBER	AMPLIFIER NUMBER	CHANNEL NUMBER	LOOP SIZE	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME
1	1	1	2 @ 23'X6'	2-4-2	2	2	B	-	-
B1	1	2	1 @ 10'X4'	4-8-8-8-4	2	2	B	-	-
3	2	1	2 @ 23'X6'	2-4-2	3	3+1	B	-	-
B3	2	2	1 @ 10'X4'	4-8-8-8-4	3	3+1	B	-	-
4	3	1	2 @ 23'X6'	2-4-2	1	1+6	B	-	-
5	3	2	2 @ 23'X6'	2-4-2	6	6	B	-	-
B2	4	1	1 @ 10'X4'	4-8-8-8-4	6	6	B	-	-

SIGNAL IDENTIFICATION



NOTES:

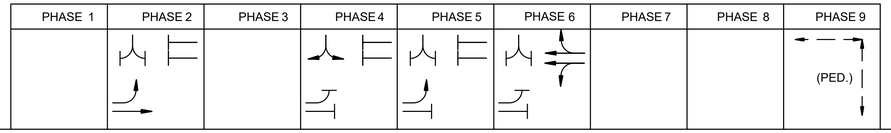
1. ALL SIGNALS SHALL HAVE CUT AWAY VISORS.
2. SIGNALS SHALL HAVE 12" LED WITH 5" LOUVERED BACK PLATES AND 3" REFLECTORIZED BORDER.

607987_TR(SIGNAL_PLANS).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	33	78
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL DATA
MAIN STREET @ NORTH STREET



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

STREET	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH OPER.
MAIN STREET	EB	A,B				G	Y	R				R	R	R	R	R	R	R	R	R							R	R	R	FY
MAIN STREET	EB	C				FYL	YL	RL				RL	RL	RL	GL	YL	①	RL	RL	RL							RL	RL	RL	FRL
MAIN STREET	WB	D,E				R	R	R				R	R	R	R	R	R	G	Y	R							R	R	R	FY
NORTH STREET	SB	F,G				R	R	R				G	Y	R	R	R	R	R	R	R							R	R	R	FR
PEDESTRIAN	ALL					DW	DW	DW				DW	DW	DW	DW	DW	DW	DW	DW	DW							W	FDW	DW	OUT

TIMING IN SECONDS																														
MINIMUM GREEN (INITIAL)						10						5			5			10												EMERGENCY ONLY
PASSAGE TIME (VEHICLE)						3						3			3			3												
MAXIMUM 1 (FREE)						68						26			15			50												
MAXIMUM 2																														
YELLOW CLEARANCE							3						3			3			3											
RED CLEARANCE								2						2			2			2										
WALK (W)																											7			
PEDESTRIAN CLEARANCE																												12	3	
RECALL						SOFT						OFF			OFF			SOFT									OFF			
MEMORY						NON-LOCK						NON-LOCK			NON-LOCK			NON-LOCK									LOCK			

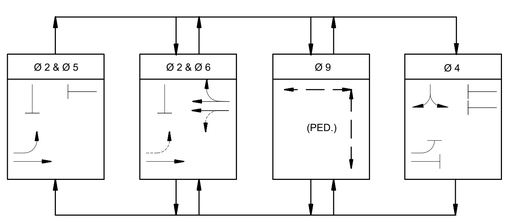
COORDINATION DATA			COORDINATION PHASE TIMING								
TIMING PLAN	CYCLE LENGTH	REF / OFFSET	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.
A.M.	100	5		69		31	16	53			
P.M., SAT,SUN,HOL	100	0		75		25	20	55			

NOTES:

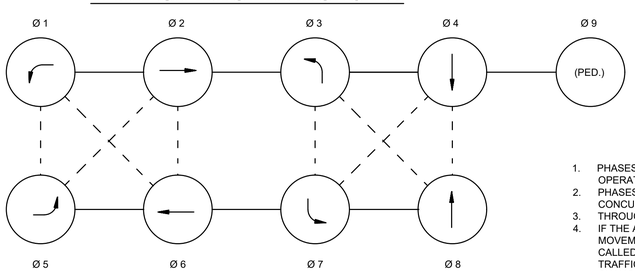
1. COORDINATION AM, 6AM TO 12PM M-F
2. COORDINATION PM, 12PM TO 9PM, M-F
3. COORDINATION SAT, SUN, HOLIDAY 8AM TO 9PM
4. FREE OPERATION ALL OTHER TIMES

① FYL IF FOLLOWED BY Ø2 & Ø6; RL IF FOLLOWED BY Ø4

PREFERENTIAL PHASING SEQUENCE



NEMA DUAL RING PHASING NOTES:



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

FIRE PREEMPTION SCHEDULE

APPROACH	PREEMPTION PHASE	NEXT PHASE CALLED
EASTBOUND R1	2+5	2+6
WESTBOUND R2	6	2+6
SOUTHBOUND R3	4	2+5

EMERGENCY VEHICLE PREEMPTION OPERATION:

1. EMERGENCY VEHICLE PREEMPTION SHALL BE ACTUATED BY AN OPTICAL SIGNAL FROM AN OPTICAL EMITTER MOUNTED ON AN EMERGENCY VEHICLE AND RECEIVED BY AN OPTICAL DETECTOR LOCATED AT INTERSECTION. A SEPARATE RECEIVING DETECTOR IS REQUIRED FOR EACH DETECTED APPROACH.
2. PREEMPTION SIGNALS FROM MULTIPLE APPROACHES SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL TIME THE CLEARANCE INTERVALS OF THE ACTIVE PHASE (IF DIFFERENT THAT TO BE SERVICED) AND ADVANCE TO AND/OR HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME CLEARANCES AND SIMILARLY SERVICE OTHER EMERGENCY VEHICLE PREEMPTION SEQUENCES IN THE ORDER RECEIVED (IF RECEIVED) OTHERWISE, RESUME NORMAL PREFERENTIAL PHASE SEQUENCE.
4. PREEMPTION MINIMUM GREENS SHALL BE TEN SECONDS.
5. NORMAL CLEARANCES SHALL BE PROVIDED ON PHASES THAT ARE TERMINATED BY PREEMPTION DEMAND.
6. ACTUAL TIMMING FOR PREEMPTION SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE FIRE DEPARTMENT AND SHALL BE APPROVED BY MASSDOT PRIOR TO OPERATION.

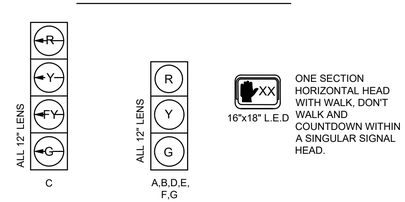
	MAJOR ITEMS REQUIRED	
PAY ITEM	QUANTITY	ITEM
816.02	1	CONTROLLER NEMA 8 PHASE TS2-TYPE 1 CAB&FDN, W/ CONC PAD
	1	SERVICE CONNECTION
	3	8' SIGNAL POLE BASE & FDN
	1	10' SIGNAL POLE, BASE & FDN
	1	25' TYPE II, GALV. STEEL MAST ARM ASSEMBLY, BASE & FDN
	1	30' TYPE II, GALV. STEEL MAST ARM ASSEMBLY, BASE & FDN
	6	1-WAY 3 SECTION SIGNAL HOUSING (12" LED)
	1	1-WAY 4 SECTION SIGNAL HOUSING (12" LED)
	4	PEDESTRIAN SIGNAL HEADS 16" x 18" LED W/ COUNTDOWN DISPLAY
	4	PEDESTRIAN PUSH BUTTONS, W/ R10-3E SIGNS, & APS ASSEMBLY
	3	PRE-EMPTION RECEIVER - SINGLE CHANNEL
	2	PRE-EMPTION PHASE SELECTION MODUAL - DUAL CHANNEL
	1	CARD RACK
	1	CONFIRMATION STROBE (WHITE)
	4	DUAL CHANNEL LOOP DETECTOR AMPLIFIER
	10	ROADWAY LOOP DETECTORS 23'X6'
	2	ROADWAY BIKE LOOP DETECTORS 4.5'X6'
	1	SPREAD SPECTRUM RADIO FOR COORDINATION
	2	SPREAD SPECTRUM RADIO ANTENNA
		Plus all necessary duct, cable, labor, miscellaneous
		material and equipment to complete the installation.

LOOP DETECTOR DATA

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

DETECTOR NUMBER	AMPLIFIER NUMBER	CHANNEL NUMBER	LOOP SIZE	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME
1	1	1	2 @ 23'X6'	2-4-2	5	2+5	B	-	-
2	1	2	2 @ 23'X6'	2-4-2	2	2	B	-	-
B1	2	1	1 @ 4.5'X6'	4-8-8-8-4	2	2	B	-	-
3	3	1	2 @ 23'X6'	2-4-2	6	6	B	-	-
4	3	2	2 @ 23'X6'	2-4-2	6	6	B	-	-
B2	2	2	1 @ 4.5'X6'	4-8-8-8-4	6	6	B	-	-
5	4	1	2 @ 23'X6'	2-4-2	4	4	B	-	-

SIGNAL IDENTIFICATION



NOTES:

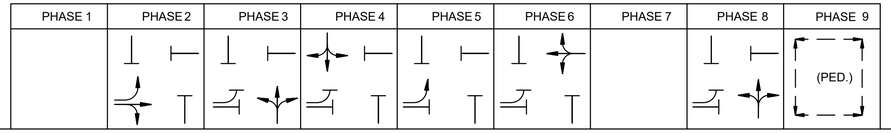
1. ALL SIGNALS SHALL HAVE CUT AWAY VISORS.
2. SIGNALS SHALL HAVE 12" LED WITH 5" LOUVERED BACK PLATES AND 3" REFLECTORIZED BORDER.

607987_TR(SIGNAL_PLANS).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	34	78
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL DATA
MAIN STREET @ SOUTH STREET



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)

STREET	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH OPER.
MAIN STREET	EB	A,L				G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R				R	R	R	R	R	R	FY
MAIN STREET	EB	B				FYL	YL	RL	RL	RL	RL	RL	RL	RL	GL	YL	①	RL	RL	RL				RL	RL	RL	RL	RL	RL	FRL
MAIN STREET	WB	C,D				R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R				R	R	R	R	R	R	FY
SOUTH STREET	NB	E				R	R	R	GL/G	YL/Y[2]	R[5]	R	R	R	R	R	R	R	R	R				G	Y	R	R	R	R	FR
SOUTH STREET	NB	F,G				R	R	R	G	Y[5]	R[5]	R	R	R	R	R	R	R	R	R				G	Y	R	R	R	R	FR
CHURCH STREET	SB	H,J,K				R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R				R	R	R	R	R	R	FR
PEDESTRIAN	ALL					DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW				DW	DW	DW	W	FDW	DW	OUT

TIMING IN SECONDS

MINIMUM GREEN (INITIAL)					10			6			6			6			10						6						EMERGENCY ONLY
PASSAGE TIME (VEHICLE)					3			3			3			3			3						3						
MAXIMUM 1 (FREE)					52			15			26			6			31						47						
MAXIMUM 2																													
YELLOW CLEARANCE						3			3			3			3			3						3					
RED CLEARANCE							3			3			3			3			3						3				
WALK (W)																											7		
PEDESTRIAN CLEARANCE																												14	3
RECALL					SOFT			OFF			OFF			OFF			SOFT						OFF			OFF		
MEMORY					NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK						NON-LOCK			LOCK		

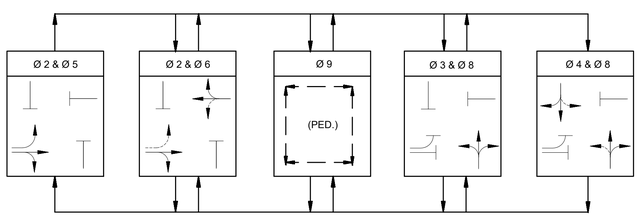
COORDINATION DATA			COORDINATION PHASE TIMING								
TIMING PLAN	CYCLE LENGTH	REF / OFFSET	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.
A.M.	100	9		57	21	22	14	43		43	
P.M.,SAT,SUN,HOL	100	98		50	18	32	14	36		50	

① FYL IF Ø2 & Ø6 FOLLOW; RL IF Ø3 & Ø8 OR Ø4 & Ø8 FOLLOW

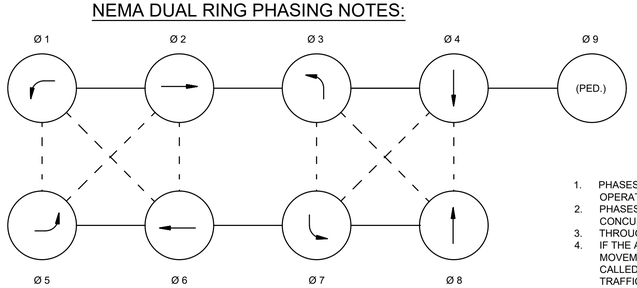
NOTES:

1. COORDINATION AM, 6AM TO 12PM M-F
2. COORDINATION PM, 12PM TO 9PM, M-F
3. COORDINATION SAT, SUN, HOLIDAY 8AM TO 9PM
4. FREE OPERATION ALL OTHER TIMES
5. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENTS IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.

PREFERENTIAL PHASING SEQUENCE



NEMA DUAL RING PHASING NOTES:



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

FIRE PREEMPTION SCHEDULE

APPROACH	PREEMPTION PHASE	NEXT PHASE CALLED
EASTBOUND R1	2+5	2+6
WESTBOUND R2	6	2+6
NORTHBOUND R3	3+8	4+8
SOUTHBOUND R4	4	4+8

EMERGENCY VEHICLE PREEMPTION OPERATION:

1. EMERGENCY VEHICLE PREEMPTION SHALL BE ACTUATED BY AN OPTICAL SIGNAL FROM AN OPTICAL EMITTER MOUNTED ON AN EMERGENCY VEHICLE AND RECEIVED BY AN OPTICAL DETECTOR LOCATED AT INTERSECTION. A SEPARATE RECEIVING DETECTOR IS REQUIRED FOR EACH DETECTED APPROACH.
2. PREEMPTION SIGNALS FROM MULTIPLE APPROACHES SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL TIME THE CLEARANCE INTERVALS OF THE ACTIVE PHASE (IF DIFFERENT THAT TO BE SERVICED) AND ADVANCE TO AND/OR HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME CLEARANCES AND SIMILARLY SERVICE OTHER EMERGENCY VEHICLE PREEMPTION SEQUENCES IN THE ORDER RECEIVED (IF RECEIVED) OTHERWISE, RESUME NORMAL PREFERENTIAL PHASE SEQUENCE.
4. PREEMPTION MINIMUM GREENS SHALL BE TEN SECONDS.
5. NORMAL CLEARANCES SHALL BE PROVIDED ON PHASES THAT ARE TERMINATED BY PREEMPTION DEMAND.
6. ACTUAL TIMMING FOR PREEMPTION SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE FIRE DEPARTMENT AND SHALL BE APPROVED BY MASSDOT PRIOR TO OPERATION.

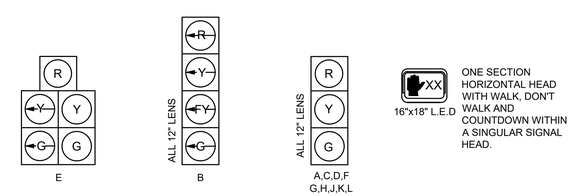
	MAJOR ITEMS REQUIRED	
PAY ITEM	QUANTITY	ITEM
816.03	1	CONTROLLER NEMA 8 PHASE TS2-TYPE 1 CAB&FDN, W/ CONC PAD
	1	SERVICE CONNECTION
	5	8' SIGNAL POLE BASE & FDN
	1	10' SIGNAL POLE BASE & FDN
	1	20' TYPE II, GALV. STEEL MAST ARM ASSEMBLY, BASE & FDN
	1	30' TYPE II, GALV. STEEL MAST ARM ASSEMBLY, BASE & FDN
	9	1-WAY 3 SECTION SIGNAL HOUSING (12" LED)
	1	1-WAY 4 SECTION SIGNAL HOUSING (12" LED)
	1	1-WAY 5 SECTION SIGNAL HOUSING (12" LED)
	8	PEDESTRIAN SIGNAL HEADS 16" LED W/ COUNTDOWN DISPLAY
	7	PEDESTRIAN PUSH BUTTONS, W/ R10-3E SIGNS, & APS ASSEMBLY
	4	PRE-EMPTION RECEIVER - SINGLE CHANNEL
	2	PRE-EMPTION PHASE SELECTION MODUAL - DUAL CHANNEL
	1	CARD RACK
	1	CONFIRMATION STROBE (WHITE)
	4	DUAL CHANNEL LOOP DETECTOR AMPLIFIER
	10	ROADWAY LOOP DETECTORS 23'X6'
	2	ROADWAY BIKE LOOP DETECTORS 10'X4'
	1	SPREAD SPECTRUM RADIO FOR COORDINATION
	1	SPREAD SPECTRUM RADIO ANTENNA
		Plus all necessary duct, cable, labor, miscellaneous
		material and equipment to complete the installation.

LOOP DETECTOR DATA

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

DETECTOR NUMBER	AMPLIFIER NUMBER	CHANNEL NUMBER	LOOP SIZE	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME
1	1	1	2 @ 23'X6'	2-4-2	5	2+5	B	-	-
2	1	2	2 @ 23'X6'	2-4-2	2	2	B	-	-
B1	2	1	1 @ 10'X4'	4-8-8-8-4	2	2	B	-	-
3	3	1	2 @ 23'X6'	2-4-2	3+8	3+8	B	-	-
4	3	2	2 @ 23'X6'	2-4-2	6	6	B	-	-
B4	2	2	1 @ 10'X4'	4-8-8-8-4	6	4	B	-	-
5	4	1	2 @ 23'X6'	2-4-2	4	4	B	-	-

SIGNAL IDENTIFICATION



NOTES:

1. ALL SIGNALS SHALL HAVE CUT AWAY VISORS.
2. SIGNALS SHALL HAVE 12" LED WITH 5" LOUVERED BACK PLATES AND 3" REFLECTORIZED BORDER.

607987_TR(SIGNAL_PLANS).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	35	81
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL
COORDINATION PLAN - 1

WEST STREET @ MAIN STREET
COORDINATION DATA

	PLAN 1 (SEC.)
SPLITS Ø1	68
SPLITS Ø2	32
SPLITS Ø6	100

	PLAN 1 (SEC.)	W/ PED Ø (SEC.)
CYCLE LENGTH	100	100
OFFSET	0	0
SPLITS Ø1 & Ø6	68	53
SPLITS Ø2 & Ø6	32	20
Ø9	–	27

NOTES:

1. THIS INTERSECTION IS THE MASTER CONTROLLER.

NORTH STREET @ MAIN STREET
COORDINATION DATA

	PLAN 1 (SEC.)
SPLITS Ø2	69
SPLITS Ø4	31
SPLITS Ø5	16
SPLITS Ø6	53

	PLAN 1 (SEC.)	W/ PED Ø (SEC.)
CYCLE LENGTH	100	100
OFFSET	5	5
SPLITS Ø2 & Ø5	16	16
SPLITS Ø2 & Ø6	53	42
SPLITS Ø4	31	20
Ø9	–	22

SOUTH ST. @ MAIN STREET
COORDINATION DATA

	PLAN 1 (SEC.)
SPLITS Ø2	57
SPLITS Ø3	21
SPLITS Ø4	22
SPLITS Ø5	14
SPLITS Ø6	43
SPLITS Ø8	43

	PLAN 1 (SEC.)	W/ PED Ø (SEC.)
CYCLE LENGTH	100	100
OFFSET	98	98
SPLITS Ø2 & Ø5	14	14
SPLITS Ø2 & Ø6	43	29
SPLITS Ø3 & Ø8	21	16
SPLITS Ø4 & Ø8	22	17
Ø9	–	24

DAILY PROGRAMMING
COORDINATION DATA

	MONDAY THRU FRIDAY	SATURDAY	SUNDAY
PLAN 1 (100 SEC. CYCLE)	6:00 AM TO NOON		
PLAN 2 (100 SEC. CYCLE)	NOON TO 9:00 PM	8:00 AM 9:00 PM	8:00 AM TO 9:00 PM
FREE OPERATION	9:00PM TO 6:00 AM	9:00PM TO 8:00 AM	9:00PM TO 8:00 AM

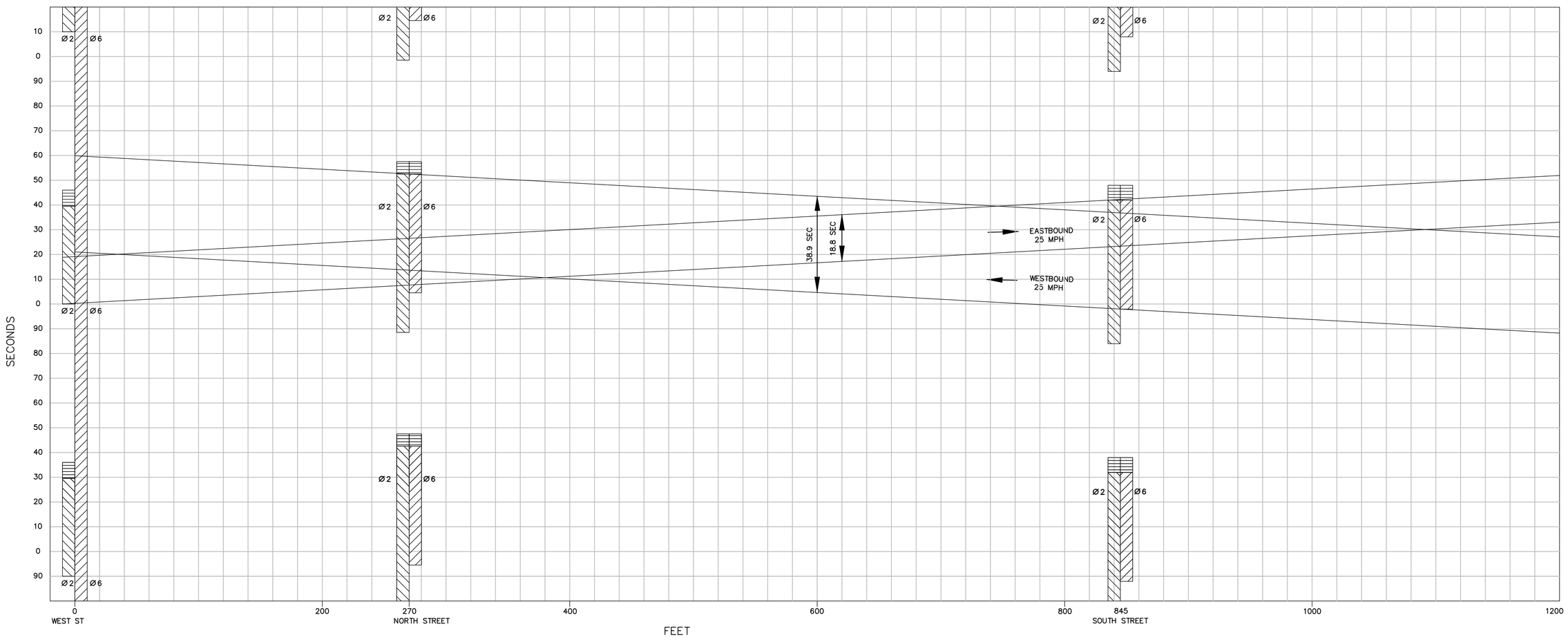
NOTES:

1. OFFSET IS REFERENCED TO BEGINNING OF PHASE 2 OR PHASE 6 GREEN.
2. SPLIT TIMES INCLUDE GREEN AND CLEARANCE INTERVAL.
3. PLAN 1 TO BE USED MON–FRI 6AM–12PM AND PLAN 2 ON MON–FRI 12PM–9PM, SAT–SUN 8AM–9PM.

LEGEND

- YELLOW AND RED CLEARANCE INTERVAL
- WESTBOUND GREEN TIME
- EASTBOUND GREEN TIME

TIME–SPACE DIAGRAMS
PLAN 1 – MONDAY–FRIDAY AM
100 SECOND CYCLE



607987_TR(COORDINATION PLAN).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	36	81
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL
COORDINATION PLAN - 2

WEST STREET @ MAIN STREET
COORDINATION DATA

	PLAN 2 (SEC.)
SPLITS Ø1	72
SPLITS Ø2	28
SPLITS Ø6	100

	PLAN 2 (SEC.)	W/ PED Ø (SEC.)
CYCLE LENGTH	100	100
OFFSET	0	0
SPLITS Ø1 & Ø6	72	53
SPLITS Ø2 & Ø6	28	20
Ø9	–	27

NOTES:

1. THIS INTERSECTION IS THE MASTER CONTROLLER.

NORTH STREET @ MAIN STREET
COORDINATION DATA

	PLAN 2 (SEC.)
SPLITS Ø2	75
SPLITS Ø4	25
SPLITS Ø5	20
SPLITS Ø6	55

	PLAN 2 (SEC.)	W/ PED Ø (SEC.)
CYCLE LENGTH	100	100
OFFSET	0	0
SPLITS Ø2 & Ø5	20	20
SPLITS Ø2 & Ø6	55	43
SPLITS Ø4	25	15
Ø9	–	22

SOUTH ST. @ MAIN STREET
COORDINATION DATA

	PLAN 2 (SEC.)
SPLITS Ø2	50
SPLITS Ø3	18
SPLITS Ø4	32
SPLITS Ø5	14
SPLITS Ø6	36
SPLITS Ø8	50

	PLAN 2 (SEC.)	W/ PED Ø (SEC.)
CYCLE LENGTH	100	100
OFFSET	98	98
SPLITS Ø2 & Ø5	14	14
SPLITS Ø2 & Ø6	36	28
SPLITS Ø3 & Ø8	18	14
SPLITS Ø4 & Ø8	32	20
Ø9	–	24

DAILY PROGRAMMING
COORDINATION DATA

	MONDAY THRU FRIDAY	SATURDAY	SUNDAY
PLAN 1 (100 SEC. CYCLE)	6:00 AM TO NOON		
PLAN 2 (100 SEC. CYCLE)	NOON TO 9:00 PM	8:00 AM 9:00 PM	8:00 AM TO 9:00 PM
FREE OPERATION	9:00PM TO 6:00 AM	9:00PM TO 8:00 AM	9:00PM TO 8:00 AM

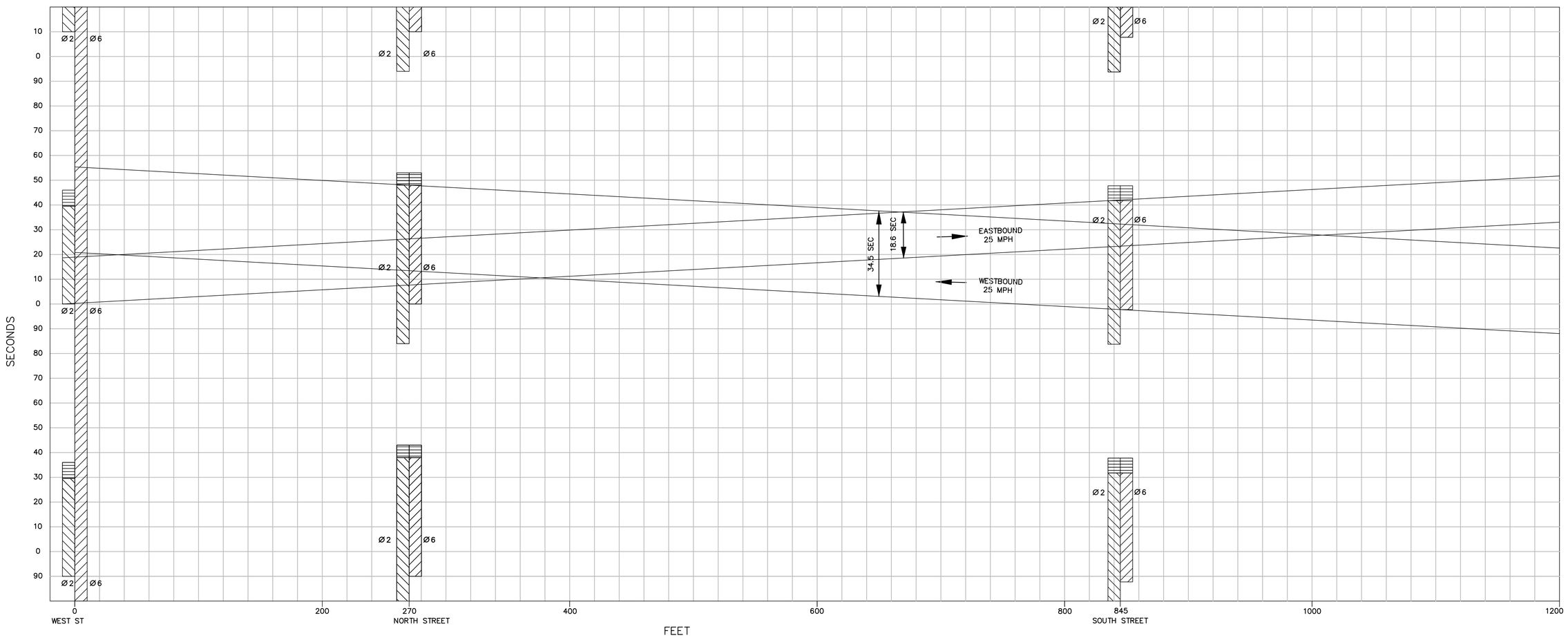
NOTES:

1. OFFSET IS REFERENCED TO BEGINNING OF PHASE 2 OR PHASE 6 GREEN.
2. SPLIT TIMES INCLUDE GREEN AND CLEARANCE INTERVAL.
3. PLAN 1 TO BE USED MON–FRI 6AM–12PM AND PLAN 2 ON MON–FRI 12PM–9PM, SAT–SUN 8AM–9PM

LEGEND

- YELLOW AND RED CLEARANCE INTERVAL
- WESTBOUND GREEN TIME
- EASTBOUND GREEN TIME

TIME–SPACE DIAGRAMS
PLAN 2 – MONDAY–FRIDAY PM
100 SECOND CYCLE

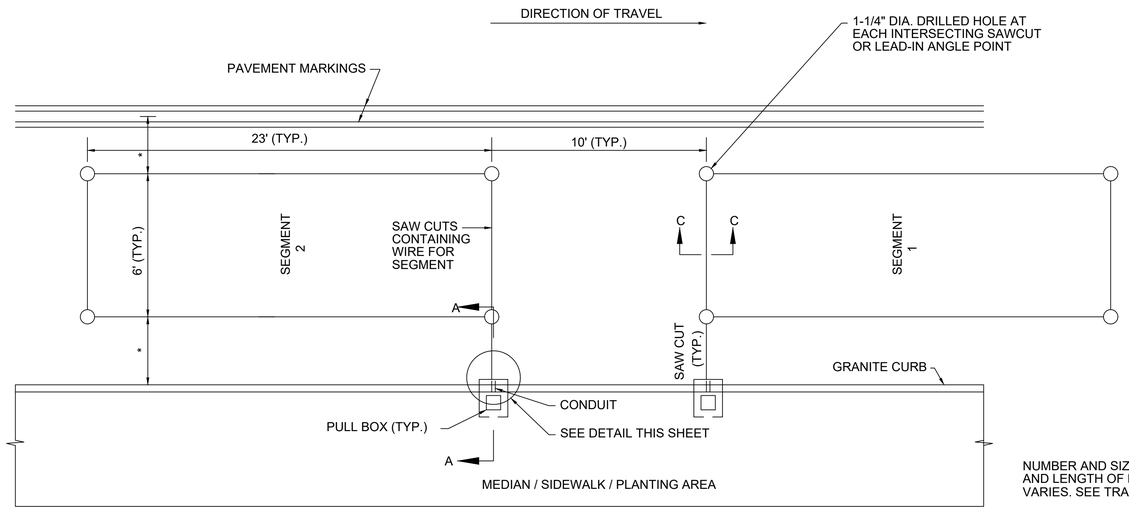


607987_TR(COORDINATION PLAN).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	37	81
PROJECT FILE NO.	607987		

LOOP DETECTOR DETAILS



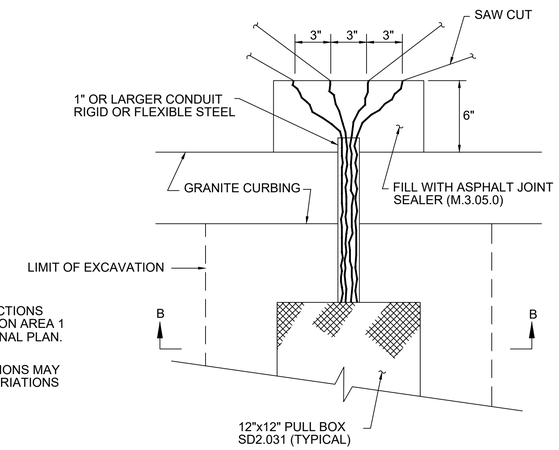
* OFFSETS FROM CURB TO LOOP AND EDGE OF LANE TO LOOP EQUAL IF NOT SHOWN

NUMBER AND SIZE OF SECTIONS AND LENGTH OF DETECTION AREA 1 VARIES. SEE TRAFFIC SIGNAL PLAN.

TYPICAL SHOWN. DIMENSIONS MAY VARY. SEE PLANS FOR VARIATIONS

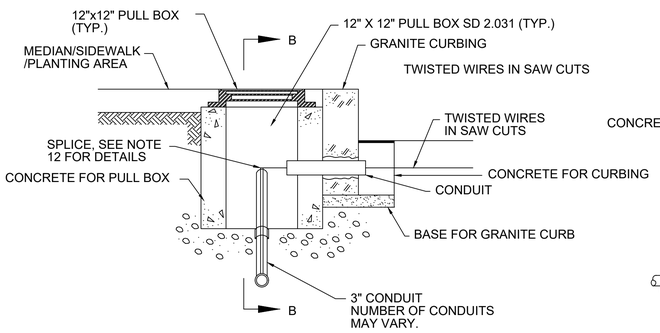
PLAN OF SEGMENTED DETECTOR DETAIL

NOT TO SCALE



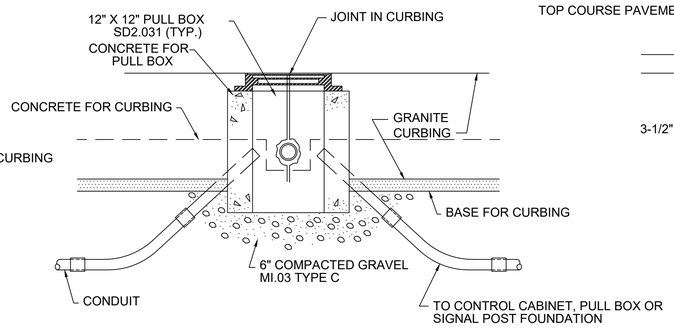
DETAIL-PLAN VIEW

NOT TO SCALE



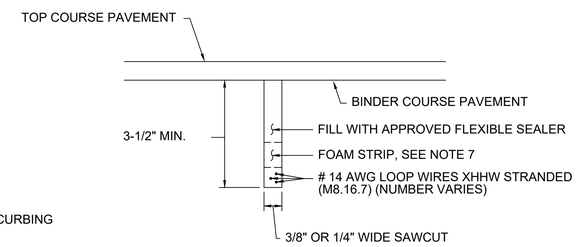
SECTION A-A

NOT TO SCALE



SECTION B-B

NOT TO SCALE



SECTION C-C
LOOPS IN SURFACE COURSE

NOT TO SCALE

DETECTOR NOTES:

1. IN BASE OR HANDHOLE, SPLICE ALL SEGMENTS TO TYPE II-SHIELDED LOOP DETECTOR LEAD-IN CABLE. SEGMENTS SHALL BE SPLICED IN PARALLEL, IN SERIES, OR IN A COMBINATION OF PARALLEL & SERIES AS SHOWN ON TRAFFIC SIGNAL PLAN 1. FOR ALL 6'x6' WIRE LOOP DECTORS USE 3 TURNS IN THE SAWCUT AND FOR LARGER LOOPS USE TWO TURNS. REFER TO TRAFFIC SIGNAL PLAN 1 FOR WIRE LOOP LAYOUT.

2. SEE STANDARDS SPECS. (MDPW 88) FOR REQUIREMENTS OF DETECTOR AMPLIFIER.

3. LEAD-IN WIRES SHALL BE TWISTED FROM SEGMENT TO SPLICE WITH SHIELDED CABLE. FIVE TURNS PER FOOT. LEAD-IN SHALL BE TYPE II (M8. 16. II).

4. BEFORE STARTING ANY SPLICING THE ELECTRICAL CONTRACT-OR SHALL FURNISH DATA SHEETS ON THE MATERIALS AND/OR METHODS TO BE USED IN ACCORDANCE WITH THE MDPW STANDARD OPERATING PROCEDURES FOR APPROVAL OF SHOP DRAWINGS. SEE SECTION 815.64

5. THE METALLIC SHIELD WHICH SHALL ENCASE THE DETECTOR LEADS FROM A SPLICE (TYPICALLY LOCATED IN A PULL BOX NEAR THE ROADWAY COMPONENT OF THE DETECTOR) TO THE CONTROLLER, AND THE DRAIN WIRE UNDER THE METALLIC SHIELD SHALL BE FIRMLY BONDED TO THE EARTH GROUNDING BUS IN THE CONTROLLER. HOWEVER, THE SHIELD AND DRAIN WIRE SHALL BE CAREFULLY INSULATED FROM THE TRANSFORMER NEUTRAL OR FROM EARTH GROUND AT ALL OTHER POINTS ALONG ITS LENGTH. SPECIFICALLY, THIS INCLUDES CAREFUL INSULATION OF THE EXPOSED PORTION OF THE SHIELD AND THE DRAIN WIRE AT THE END AWAY FROM THE CONTROLLER WHERE IT IS SPLICED TO WIRES LEADING TO THE ROADWAY COMPONENT OF THE DETECTOR. THIS IS IMPORTANT TO AVOID A GROUND RETURN LOOP.

6. FILL ALL CONDUIT OPENINGS WITH DUCT SEAL.

7. AFTER SAW CUTS ARE COMPLETE, BLOW OUT WITH OIL AND WATER & FREE COMPRESSED AIR UNTIL CUTS ARE CLEAN AND DRY. INSERT WIRE INTO CLEAN SLOT WITH A BLUNT, SMOOTH, ROUND EDGED TOOL OF WOOD OR PLASTIC SUCH AS A PAINT STIRRER, DO NOT USE A SCREWDRIVER. THEN INSERT FOAM PLASTIC HOLD DOWN STRIPS, SIMILAR TO ETHA FOAM SB STRIPS SHALL BE ABOUT 2" LONG, PLACED IN THE SLOT ABOUT EVERY 2 FEET. THEN POUR SEALER, TAKING CARE TO ELIMINATE BUBBLES.

8. THE COMBINED ROADWAY LOOP, TWISTED LEAD-IN WIRES, SPLICE AND SHIELDED LEAD-IN CABLE SHOULD HAVE A RES-ISTANCE TO GROUND OF AT LEAST 50 TO 100 MEGOHMS. THE LOWEST ACCEPTABLE VALUE SHALL BE 10 MEGOHMS UNDER WORST CASE CONDITIONS. SEE STANDARD SPECS. (MDPW 88) FOR ADDITIONAL REQUIREMENTS.

9. FOR INSTALLATION OF SINGLE (ONE SEGMENT) SMALL WIRE LOOP DETECTOR. DETAIL IS THE SAME.

10. CUT LOOPS INTO EXISTING PAVEMENT AND FILL WITH APPROVED FLEXIBLE LOOP.

11. DETECTOR WIRE SHALL BE A DIFFERENT COLOR FOR EACH LOOP.

12. SPLICING PATTERN P= SERIES/PARALLEL: SPLICE SEGMENTS 1 AND 3 OF AN INDIVIDUAL DETECTOR IN SERIES. SPLICE SEGMENTS 2 AND 4 IN SERIES. SPLICE THE RESULTANT TWO GROUPS IN PARALLEL. SPLICE THE RESULTANT COMBINATION TO ONE LEAD-IN CABLE. CONNECT THIS CABLE TO AN OTHERWISE UNUSED AMPLIFIER CHANNEL.

SPLICING PATTERN S=SERIES: SPLICE ALL SEGMENTS (TYPICALLY FOUR, BUT MAY BE LESS) OF AN INDIVIDUAL DETECTOR IN SERIES. SPLICE THE RESULTANT COMBINATION TO ONE LEAD-IN CABLE TO AN OTHERWISE UNUSED AMPLIFIER CHANNEL.

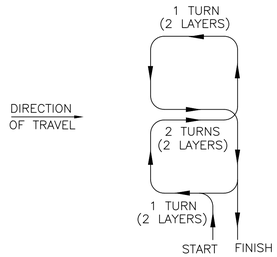
607987_TRI(LOOP_DETECTOR).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

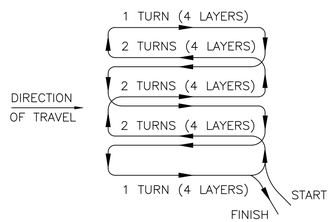
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	38	81
PROJECT FILE NO.	607987		

TRAFFIC SIGNAL DETAILS
BICYCLE LOOP DETECTOR

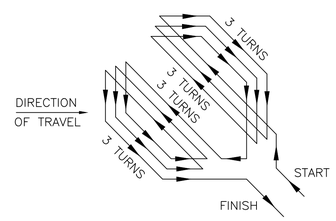
WINDING DETAILS



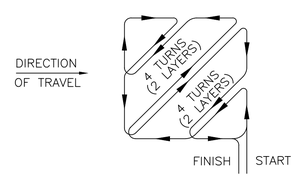
TYPE Q DETECTOR



TYPE D–Q DETECTOR

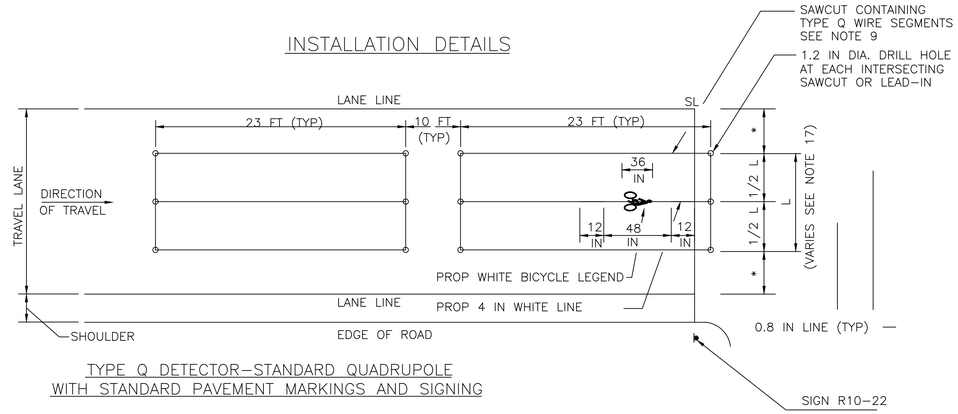


TYPE D–1 DETECTOR

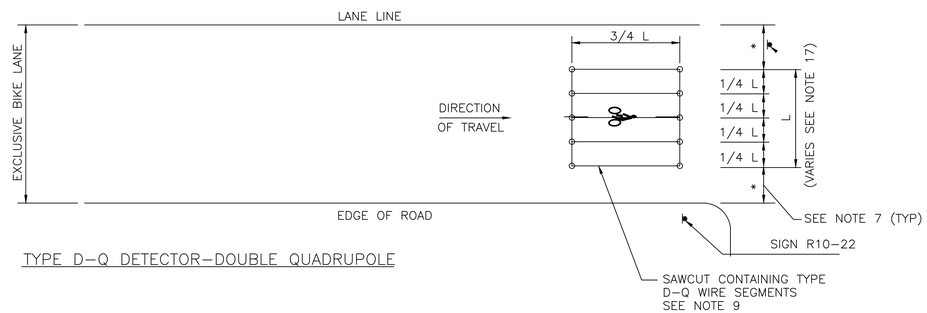


TYPE D–2 DETECTOR

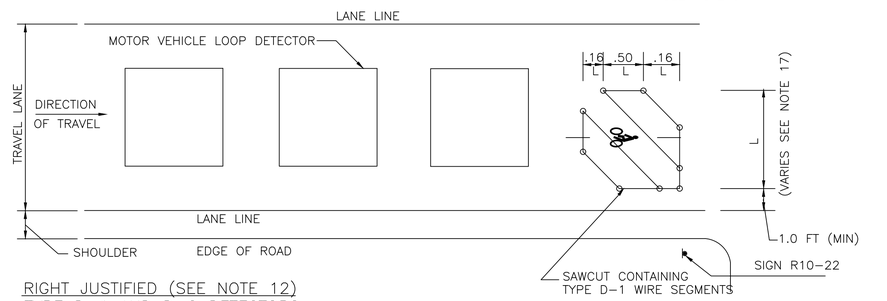
INSTALLATION DETAILS



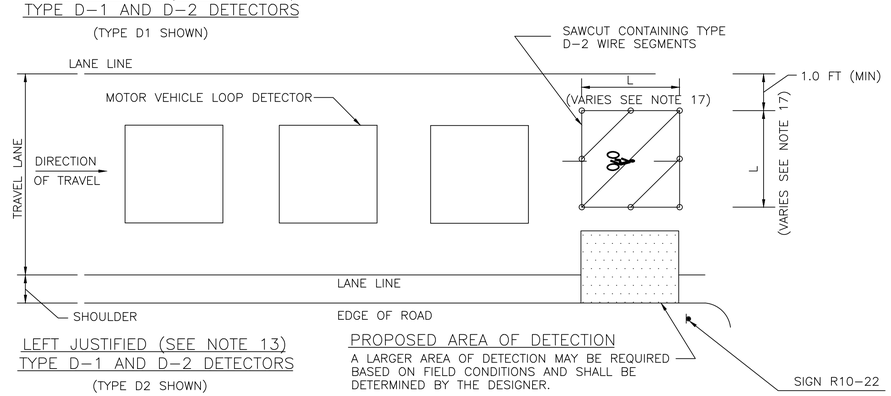
TYPE Q DETECTOR–STANDARD QUADRUPOLE
WITH STANDARD PAVEMENT MARKINGS AND SIGNING



TYPE D–Q DETECTOR–DOUBLE QUADRUPOLE

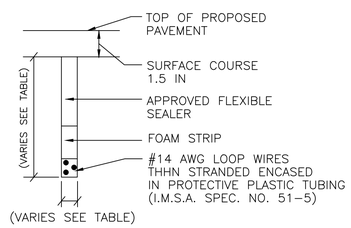


RIGHT JUSTIFIED (SEE NOTE 12)
TYPE D–1 AND D–2 DETECTORS
(TYPE D1 SHOWN)



LEFT JUSTIFIED (SEE NOTE 13)
TYPE D–1 AND D–2 DETECTORS
(TYPE D2 SHOWN)

PROPOSED AREA OF DETECTION
A LARGER AREA OF DETECTION MAY BE REQUIRED BASED ON FIELD CONDITIONS AND SHALL BE DETERMINED BY THE DESIGNER.



SECTION THRU LOOP DETECTOR

SAWCUT SLOT DEPTH GUIDE		
TURNS OF WIRE	SLOT SIZE	
	DEPTH (IN)	WIDTH (IN)
1	1.5	0.5
2	1.5	0.5
3	1.5	0.5
4	2.0	0.5
5	2.0	0.5
6	2.0	0.5
7	2.0	0.5
8	2.0	0.5

BICYCLE LOOP DETECTOR DETAILS

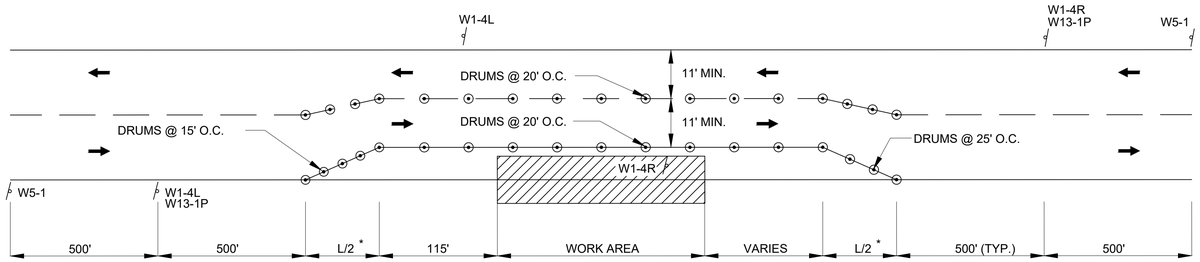
NOTES:

1. REFER TO VEHICLE LOOP DETECTOR DETAIL SHEET FOR ADDITIONAL NOTES AND CONSTRUCTION DETAILS.
2. ALL DETAILS ARE GRAPHICAL WITH NO SCALE.
3. THE NUMBER, SIZE, LOCATION AND LENGTH OF DETECTION AREA VARIES AND SHALL BE DETERMINED BY THE DESIGNER REFER TO TRAFFIC SIGNAL PLAN.
4. BICYCLE LOOPS SHALL BE CONNECTED TO SEPARATE LOOP DETECTOR AMPLIFIERS CAPABLE OF HIGHER LEVELS OF SENSITIVITY.
5. BICYCLE LOOPS SHALL BE INSTALLED IN THE BASE COURSE OF EXISTING PAVEMENT. THE EXISTING PAVEMENT SHALL BE COLD PLANED TO THE BASE COURSE AND SAWCUT FOR LOOP INSTALLATION.
6. SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED FOR ALL BICYCLE DETECTORS TO INFORM CYCLISTS OF THE DETECTION AREA.
7. * OFFSETS FROM LANE LINE EQUAL UNLESS OTHERWISE NOTED. SEE PLANS.
8. TYPE Q DETECTORS SHALL BE WIRED IN A FIGURE EIGHT PATTERN WITH A DOUBLE LAYER DESIGN ("2–4–2") WITH 2 TURNS IN THE PERIMETER SLOTS AND 4 TURNS IN THE CENTER SLOT AS SHOWN IN THE WINDING DETAIL.
9. BICYCLES WILL BE DETECTED WITHIN 4 IN. OF THE INTERIOR LONGITUDINAL LOOP WIRES FOR TYPE Q AND D–Q DETECTORS.
10. PROVIDE 3 TURNS FOR TYPE D–1 DETECTORS.
11. INSTALL 2 LAYERS OF WIRE WOUND IN THE SAME DIRECTION IN BOTH LAYERS FOR TYPE D–2 DETECTORS. THE RESULT IS 4 TURNS IN EACH DIAGONAL.
12. RIGHT JUSTIFIED LOOP DETECTORS SHALL BE CONSIDERED FOR THE FOLLOWING CONDITIONS:
    a) BICYCLE STOPPING ON THE RIGHT SIDE OF A THRU TRAVEL LANE.
    b) BICYCLE STOPPING ON THE RIGHT SIDE OF AN EXCLUSIVE LEFT TURN LANE.
13. LEFT JUSTIFIED LOOP DETECTORS SHALL BE CONSIDERED FOR THE FOLLOWING CONDITIONS:
    a) BICYCLE STOPPING ON THE LEFT SIDE OF A SHARED LEFT/THRU LANE.
    b) BICYCLE STOPPING JUST TO THE RIGHT OF THE CENTERLINE WHEN TURNING LEFT ON A TWO–LANE ROADWAY.
14. RECTANGULAR LOOP DETECTORS SHALL BE CONSIDERED FOR BICYCLES STOPPING ON EITHER THE LEFT OR RIGHT SIDE OF A TWO–LANE ROADWAY. THE MINIMUM OFFSET FROM LANE LINE OR CURB LINE SHALL BE 1.0 FT.
15. PAVEMENT CORES OR TEST PITS MAY BE REQUIRED TO DETERMINE THE DEPTH OF EXISTING PAVEMENT AND CONFIRM THAT THE DETECTION OPTION CHOSEN AND CORRESPONDING WINDING PATTERN CAN BE ACCOMMODATED.
16. THESE DETAILS APPLY TO BICYCLE LOOPS INSTALLED IN ROADWAYS. PUSH BUTTON ACTUATION SHALL BE CONSIDERED FOR RECREATIONAL BIKE PATHS.
17. THE MINIMUM DIMENSION FOR L SHALL BE 6 FT MIN. FOR DETECTORS TYPE D–Q, D–1 & D–2. FINAL DIMENSIONS SHALL BE DETERMINED BY THE DESIGN ENGINEER.

607987_TRI(LOOP_DETECTOR).DWG Plotted on 11-Jul-2019 9:06 AM

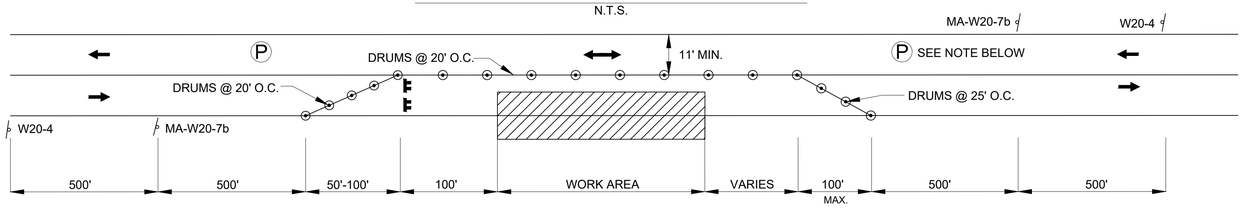
OPERATIONAL SIGNING

TEMPORARY LANE CLOSURES SHOWN ARE FOR ROADWAY CONSTRUCTION. ALL DRUMS AND SIGNS ARE SHOWN AS THEY SHOULD APPEAR DURING THE WORKING DAY, OR WHILE OPERATING IN THE WORK ZONE. FOR WORK ON OPPOSITE SIDES OF ROADWAY, REVERSE ALL SIGNING, DRUMS, AND TAPER LENGTHS.



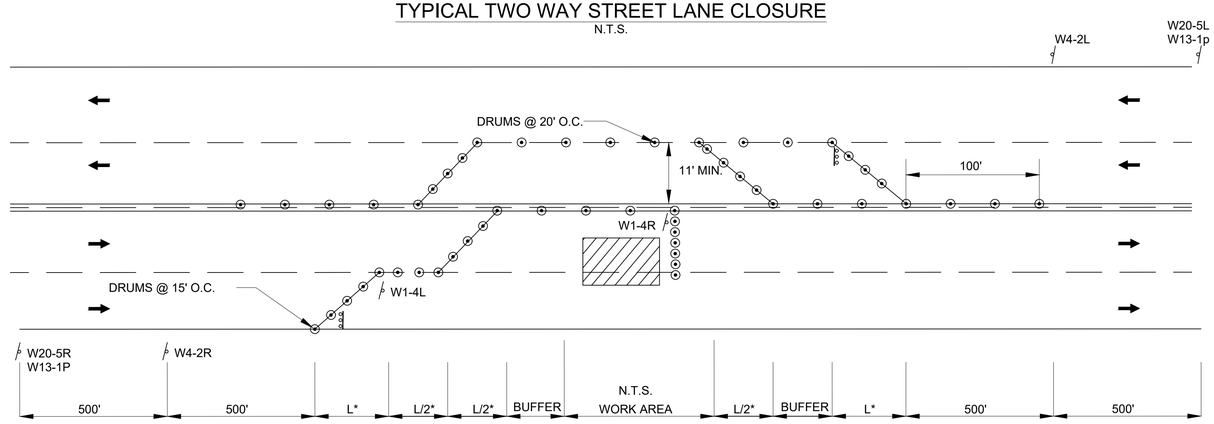
TYPICAL TWO WAY STREET LANE SHIFT

N.T.S.

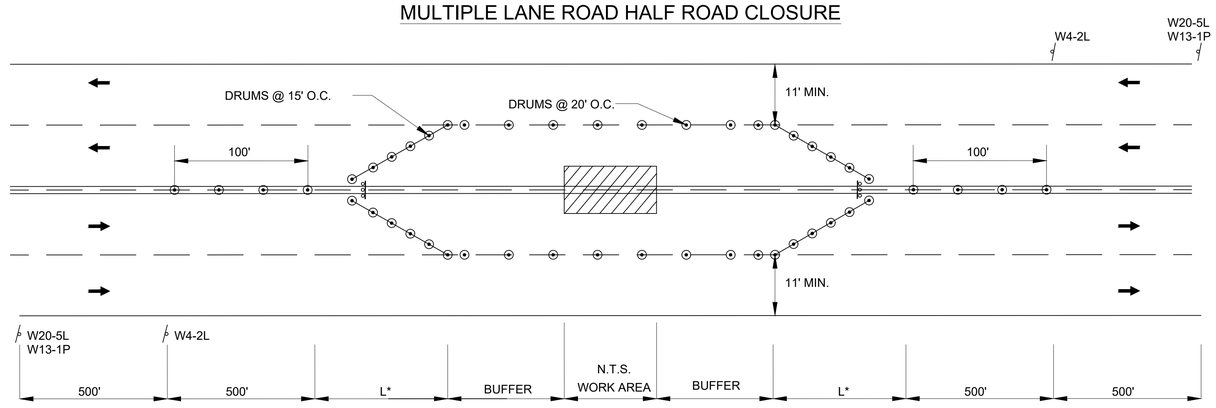


TYPICAL TWO WAY STREET LANE CLOSURE

N.T.S.



MULTIPLE LANE ROAD HALF ROAD CLOSURE



MULTIPLE LANE ROAD INTERIOR LANE CLOSURE

NOTE:
WORK THAT WILL DISRUPT EXISTING TRAFFIC PATTERNS WITHIN THE EXISTING ROADWAYS (LANE REDUCTION, ETC.) SHALL ONLY BE DONE DURING OFF PEAK HOURS. NUMBERS AND LOCATION OF POLICE DETAILS FOR WORK ZONE AND/OR DETOUR MANAGEMENT SHALL BE DETERMINED BY THE RESIDENT ENGINEER ON A CASE BY CASE BASIS, AS WORK PROGRESSES.

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

LEGEND

⊙	REFLECTORIZED DRUM/ TRAFFIC CONE
➡	PROPOSED TRAFFIC FLOW
▨	WORK ZONE
	TYPE III BARICADE
Ⓟ	POLICE DETAIL
	CONSTRUCTION SIGN
N.T.S.	NOT TO SCALE
	ARROW BOARD

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	39	81
PROJECT FILE NO.	607987		

TEMPORARY TRAFFIC CONTROL PLANS - 1

GENERAL NOTES

1. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH PART 6 OF THE LATEST EDITION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)

2. ALL CHANNELIZING DEVICES SHALL BE SET @ 25' O.C. MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE RESIDENT ENGINEER.

3. ALL DRUMS SHALL BE APPROPRIATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORK HOURS, TO MAINTAIN SUCH ACCESS.

4. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.

5. THE CONTRACTOR SHALL NOTIFY THE TOWN OF WARE POLICE, FIRE, AND HIGHWAY DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF LANE CLOSURES.

6. A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES EXCEPT THAT DURING WORKING HOURS, TRAFFIC MAY BE REDUCED TO ONE LANE UNDER POLICE CONTROL FOR SHORT TIME PERIODS WHEN REQUIRED FOR THE WORK, AS SHOWN.

7. DETOURS FOR ONE LANE CLOSURES FOR TRAVELWAY SURFACE RESTORATION WORK ONLY (I.E. PAVEMENT MILLING AND RESURFACING). EXCEPTIONS MAY BE MADE FOR MAJOR INTERSECTION WORK, BUT MUST BE APPROVED IN WRITING BY THE RESIDENT ENGINEER AND COORDINATED WITH THE APPROPRIATE LOCAL AUTHORITIES.

8. GRADE SEPARATIONS IN EXCESS OF 2 INCHES DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF DRUMS.

9. EXCAVATION EDGES IN EXCESS OF 4 INCHES DEEP SHALL BE PROTECTED DURING NON-WORKING HOURS BY BACKFILLING WITH A WEDGE OF GRAVEL OR SOIL COMPACTED TO A 4:1 SLOPE.

10. 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED DURING CONSTRUCTION.

11. NON-ESSENTIAL TEMPORARY CONSTRUCTION TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS.

12. ADVISORY SPEED PLATES (W13-1) SHALL BE USED IF APPROPRIATE AND AS DIRECTED BY THE ENGINEER.

13. SUPPORTS FOR ADVANCED WARNING SIGNS SHALL BE 4" X 4" PRESSURE TREATED WOOD POSTS.

IDENTIFI–CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF POSTS REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACKGROUND	LEGEND	BORDER			
MA-W20-7b	36"	36"	POLICE OFFICER AHEAD	SEE MASSDOT STANDARD SIGN BOOK			2	FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W5-1	36"	36"	ROAD NARROWS	①	①	①	2	FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W1-4R	36"	36"					3	FLUORESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W1-4L	36"	36"					3	FLUORESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W13-1P	24"	24"	XX M.P.H.				6	FLUORESCENT ORANGE	BLACK	BLACK	MOUNT W/ W1-4R/L & W20-5L/R	4.00	24.00
R9-9	30"	18"	SIDEWALK CLOSED				2	FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W4-2R	36"	36"					3	FLUORESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W4-2L	36"	36"					1	FLUORESCENT ORANGE	BLACK	BLACK	1	9.00	9.00
W20-4	36"	36"	ONE LANE ROAD AHEAD				2	FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W20-5R	36"	36"	RIGHT LANE CLOSED AHEAD				1	FLUORESCENT ORANGE	BLACK	BLACK	1	9.00	9.00
W20-5L	36"	36"	LEFT LANE CLOSED AHEAD				3	FLUORESCENT ORANGE	BLACK	BLACK	3	9.00	27.00

607987_TR(TTCP).DWG Plotted on 11-Jul-2019 9:06 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

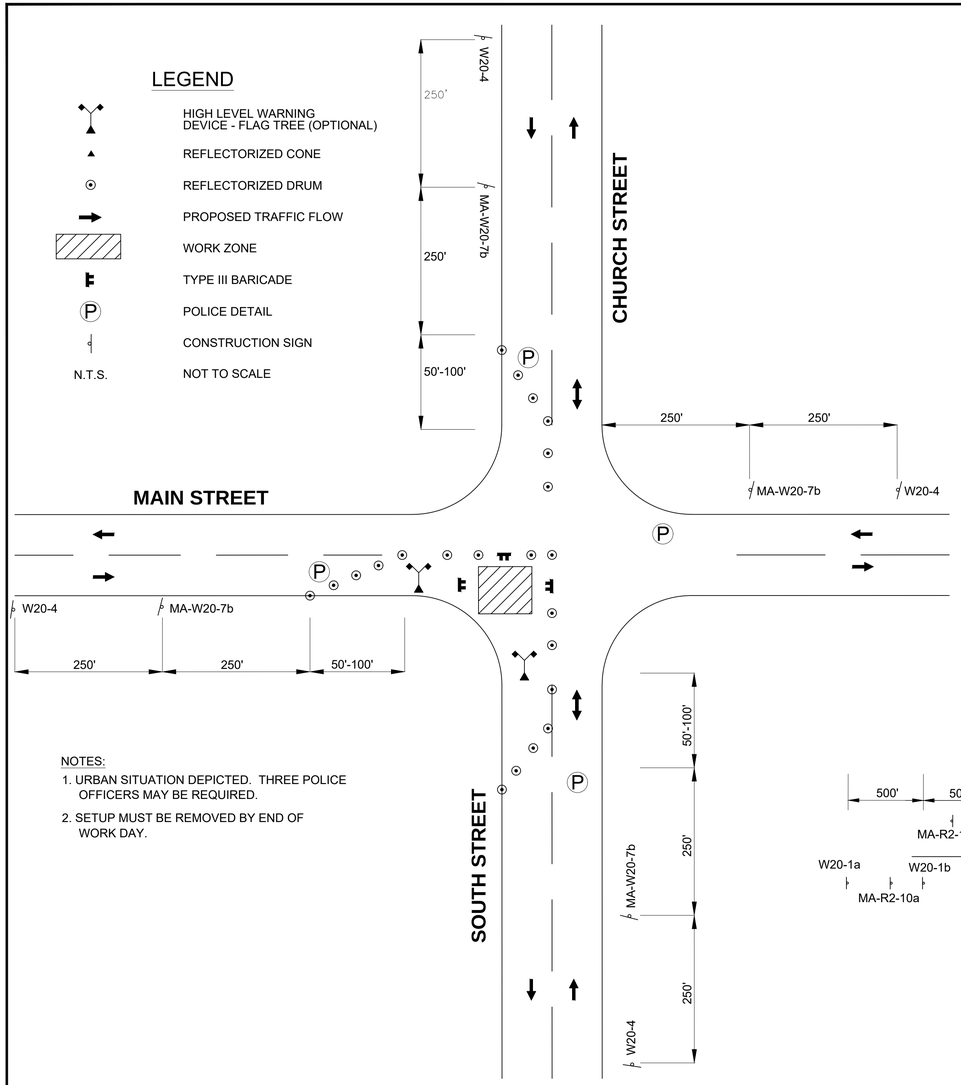
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	40	81
PROJECT FILE NO.	607987		

TEMPORARY TRAFFIC CONTROL PLANS - 2

LEGEND

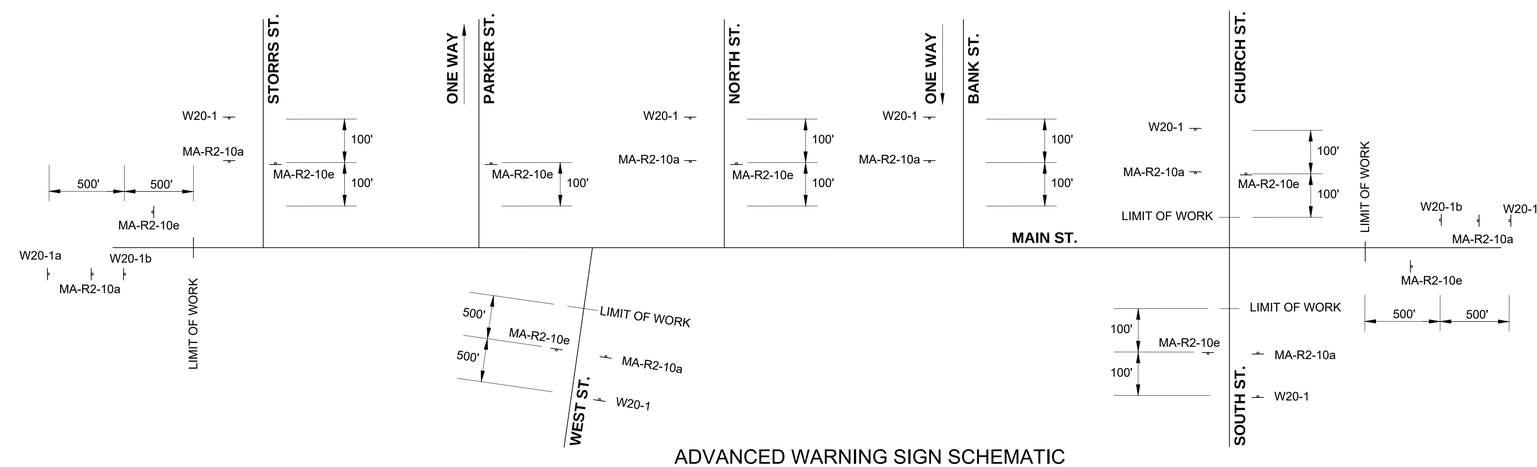
- HIGH LEVEL WARNING DEVICE - FLAG TREE (OPTIONAL)
- REFLECTORIZED CONE
- REFLECTORIZED DRUM
- PROPOSED TRAFFIC FLOW
- WORK ZONE
- TYPE III BARICADE
- POLICE DETAIL
- CONSTRUCTION SIGN
- N.T.S. — NOT TO SCALE

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	LEGEND	BORDER	NUMBER OF POSTS REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
W20-1	36"	36"	ROAD WORK AHEAD	SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			6	FLUORESCENT ORANGE	BLACK	BLACK	6	9.00	54.00
MA-W20-7b	36"	36"	POLICE OFFICER AHEAD	SEE MASSDOT STANDARD SIGN BOOK			4	FLUORESCENT ORANGE	BLACK	BLACK	4	9.00	36.00
MA-R2-10a	48"	36"	WORK ZONES / SPEEDING FINES DOUBLED	SEE MASSDOT STANDARD SIGN BOOK			8	FLUORESCENT ORANGE / WHITE	BLACK	BLACK	8	12.00	96.00
MA-R2-10e	36"	48"	END ROAD WORK / DOUBLE FINES END	SEE MASSDOT STANDARD SIGN BOOK			8	FLUORESCENT ORANGE / WHITE	BLACK	BLACK	8	12.00	96.00
W20-1a	36"	36"	ROAD WORK (500FT)	SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			2	FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W20-1b	36"	36"	ROAD WORK (1000FT)				2	FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W20-4	36"	36"	ONE LANE ROAD AHEAD				4	FLUORESCENT ORANGE	BLACK	BLACK	4	9.00	36.00

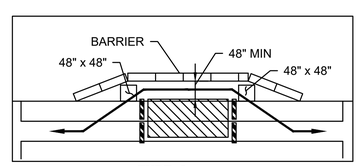


NOTES:
1. URBAN SITUATION DEPICTED. THREE POLICE OFFICERS MAY BE REQUIRED.
2. SETUP MUST BE REMOVED BY END OF WORK DAY.

TYPICAL MOVABLE WORK AREA "OPERATIONAL" (DAY-TO-DAY) PLAN
N.T.S.



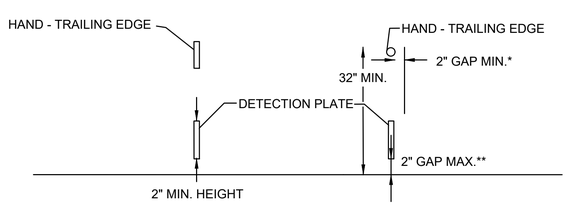
ADVANCED WARNING SIGN SCHEMATIC
N.T.S.



TYPE I

NOTES
1. ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
2. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
3. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN, PEDESTRIANS MAY BE REQUIRED TO CROSS TO THE OPPOSITE SIDE OF THE STREET AS DIRECTED BY THE RESIDENT ENGINEER.
4. BYPASS IS TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE RESIDENT ENGINEER.

PEDESTRIAN DETAILS
N.T.S.



CROSS SECTION VIEW

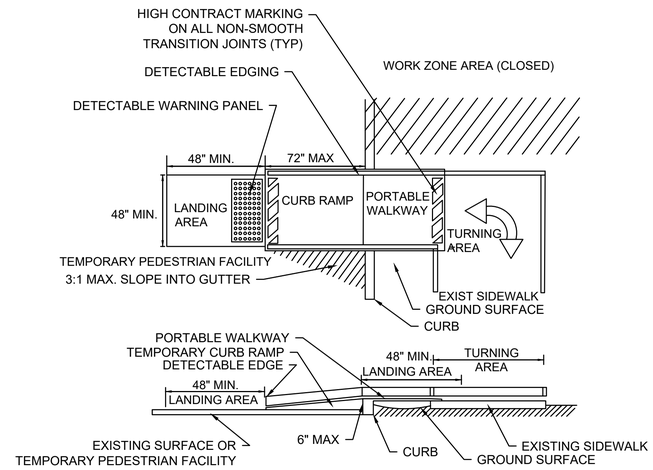
NOTES
* THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT
** A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE

PEDESTRIAN CHANNELIZING DEVICE
N.T.S.

607987_TR(TTCP).DWG Plotted on 11-Jul-2019 12:47 PM

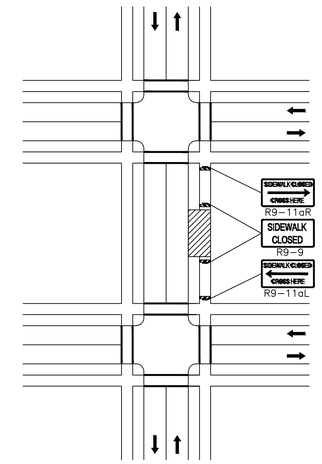
607987_TR(TTCP).DWG Plotted on 11-Jul-2019 9:07 AM

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	NUMBER OF POSTS REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
R9-8	36"	18"	PEDESTRIAN CROSSWALK	SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			2	WHITE	BLACK	BLACK	2	4.50	9.00
R9-9	30"	24"	SIDEWALK CLOSED				2	WHITE	BLACK	BLACK	2	5.00	10.00
R9-10	48"	24"	SIDEWALK CLOSED USE OTHER SIDE				2	WHITE	BLACK	BLACK	2	8.00	16.00
R9-11aL	48"	24"	SIDEWALK CLOSED CROSS HERE				1	WHITE	BLACK	BLACK	1	8.00	16.00
R9-11aR	48"	24"	SIDEWALK CLOSED CROSS HERE				1	WHITE	BLACK	BLACK	1	8.00	8.00
W11-2	30"	30"					4	FLUORESCENT ORANGE	BLACK	BLACK	4	6.25	25.00
W16-7pL	24"	12"					2	FLUORESCENT ORANGE	BLACK	BLACK	2	2.00	4.00
W16-9P	24"	12"	AHEAD				2	FLUORESCENT ORANGE	BLACK	BLACK	2	2.00	4.00



TYPICAL PEDESTRIAN DETAIL PED-2

N.T.S.

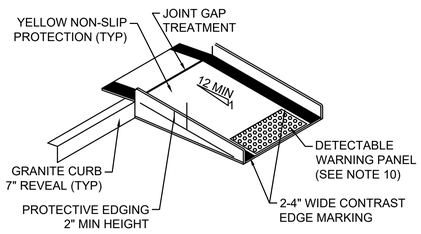


NOTES:

IF A MINIMUM WIDTH OF 48" OF SOLID SMOOTH UNOBSTRUCTED SURFACE REMAINS ALONG THE WORK AREA THEN THE DETAIL CAN BE DISREGARDED. DELINEATION OF THE WORK AREA WILL STILL BE REQUIRED. ALL PEDESTRIAN DETOUR ROUTES SHALL BE ADA/MAAB COMPLIANT IN THEIR ENTIRETY.

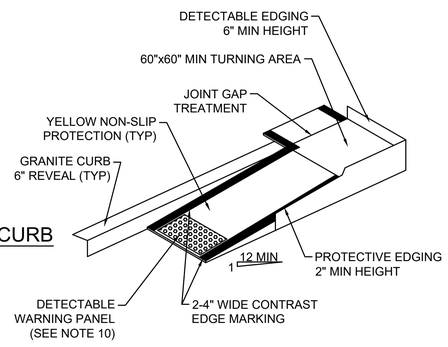
TYPICAL PEDESTRIAN DETAIL PED-5

N.T.S.



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

N.T.S.

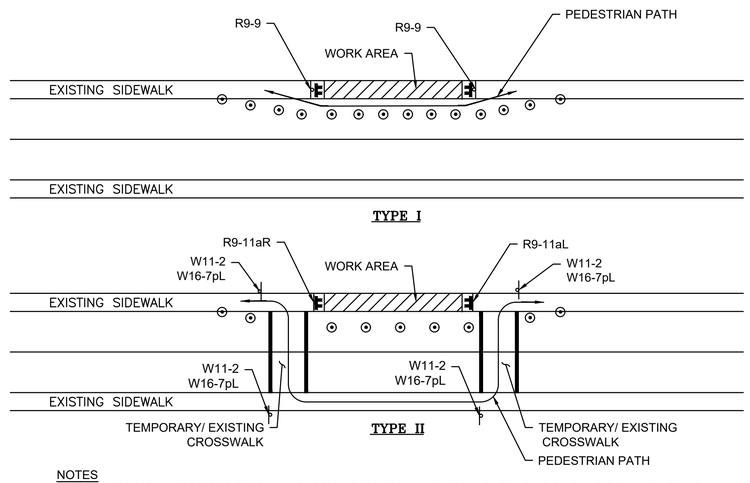


TEMPORARY CURB RAMP-PARALLEL TO CURB

N.T.S.

NOTES:

1. CURB RAMPS SHALL BE 60" MIN. WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2" MIN. HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3. PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.
3. DETECTABLE EDGING WITH 6" MIN. HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
5. CURB RAMP AND LANDINGS SHOULD HAVE A 2% MAX. CROSS-SLOPE.
6. CLEAR SPACE 48"x48" MIN. SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5" WIDE.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5". EDGES SHALL BE VERTICAL UP TO 0.25" HIGH, AND BEVELED AT 1:2 BETWEEN 0.25" AND 0.5" HIGH.
10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PANEL MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED.

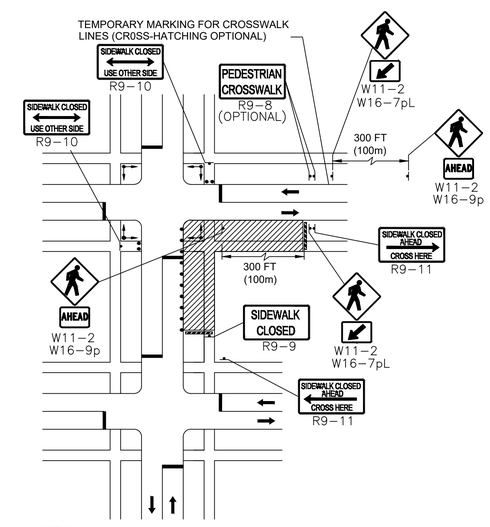


NOTES

1. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR. TRAFFIC SHOULD BE HANDLES AS SHOWN ELSEWHERE.
2. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHOULD BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER. TEMPORARY CURB RAMPS WILL BE REQUIRED AT ALL TEMPORARY CROSSWALK LOCATIONS.
3. THE TEMPORARY SIDEWALK SHALL BE A MINIMUM OF 4 FEET WIDE. IF THE WALKWAY EXCEEDS 200 FEET THEN A 5 FOOT BY 5 FOOT PASSING ZONE SHALL BE PROVIDED.

TYPICAL SIDEWALK CLOSURE

N.T.S.



NOTES:

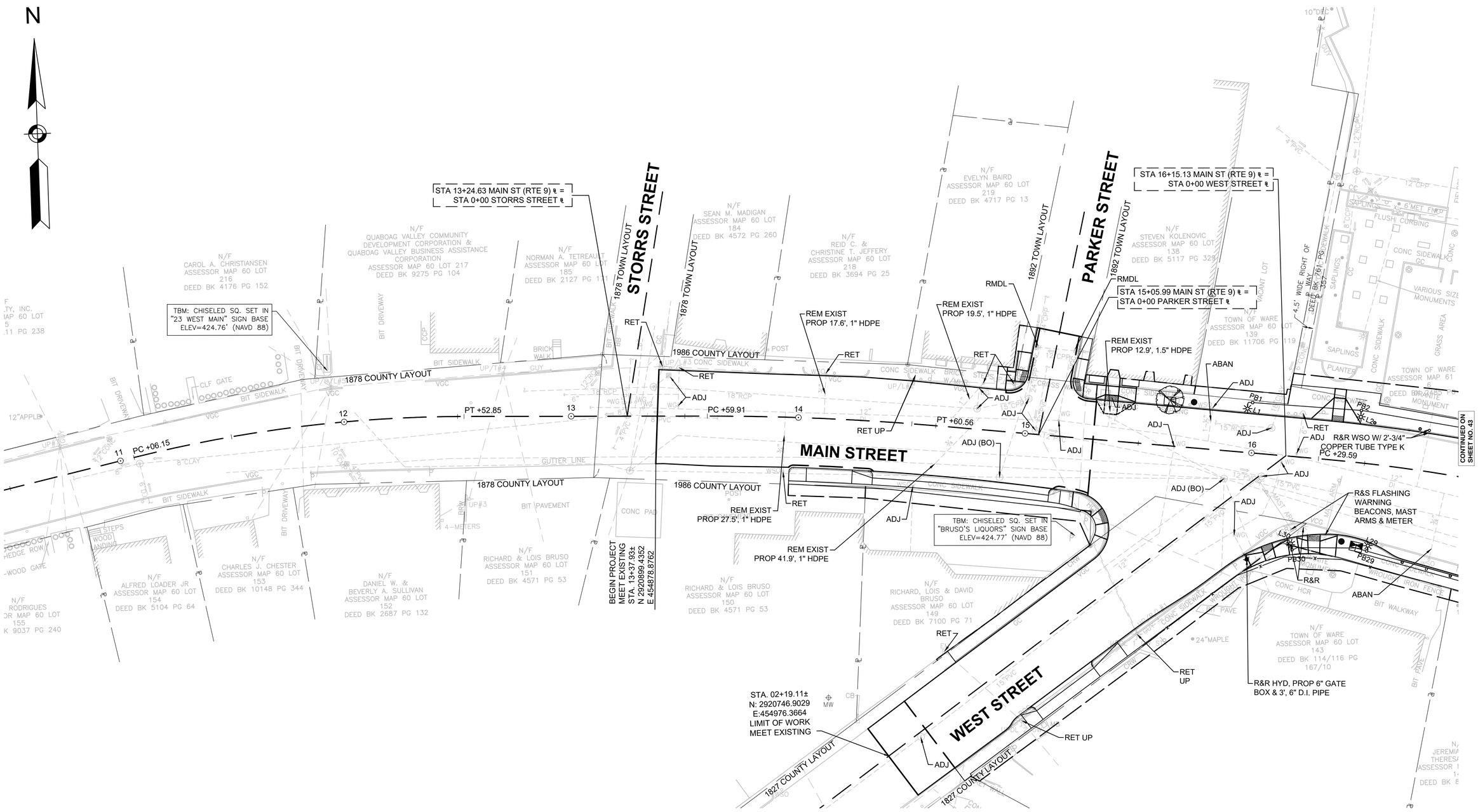
FOR LONG-TERM STATIONARY WORK, THE DOUBLE YELLOW CENTERLINE AND/OR LANE LINES SHOULD BE REMOVED BETWEEN THE CROSSWALK LINES.

TYPICAL PEDESTRIAN DETAIL PED-6

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	42	81
PROJECT FILE NO.	607987		

UTILITY PLAN - 1

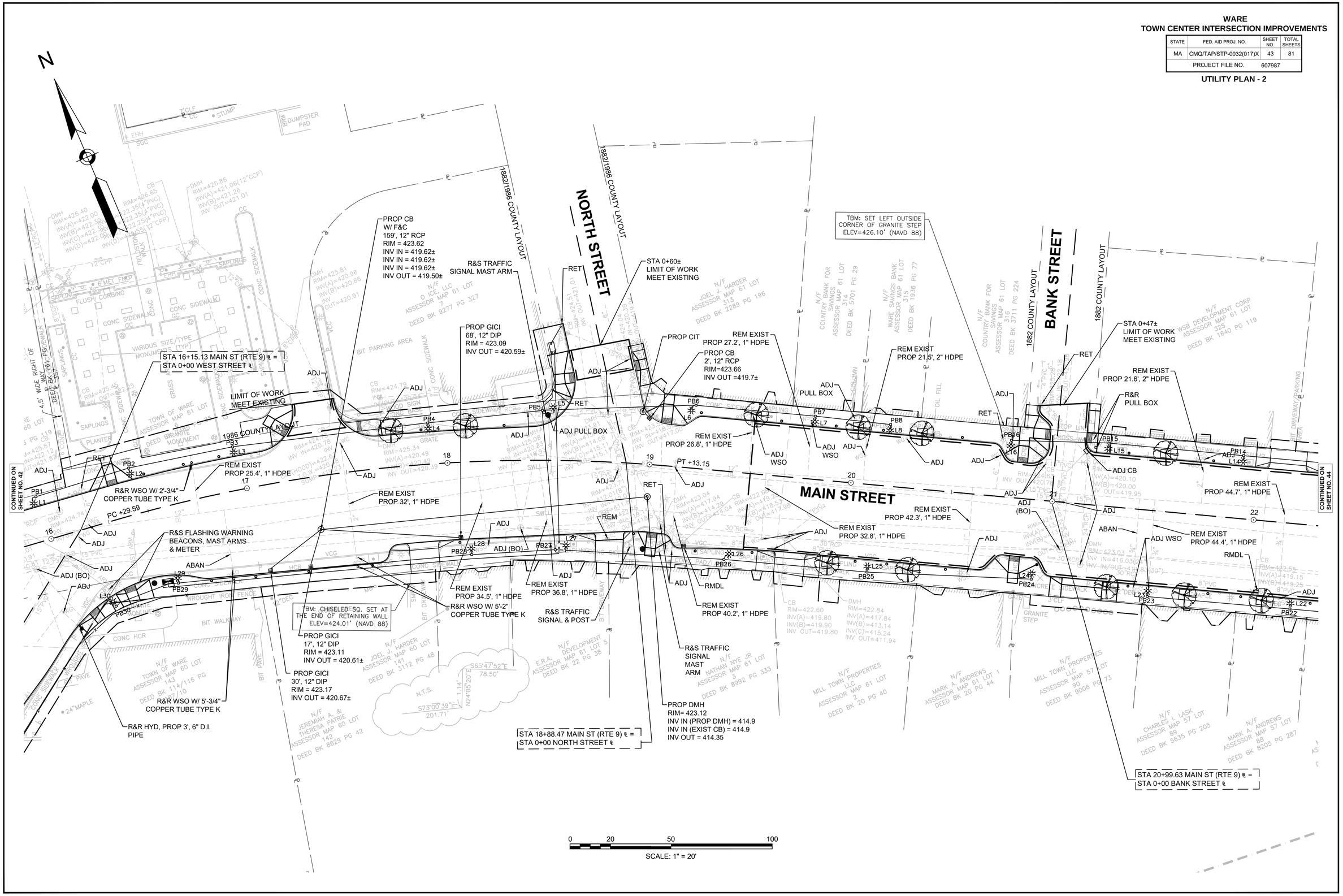


607987_HD(UT).DWG Plotted on 11-Jul-2019 9:07 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	43	81
PROJECT FILE NO.	607987		

UTILITY PLAN - 2

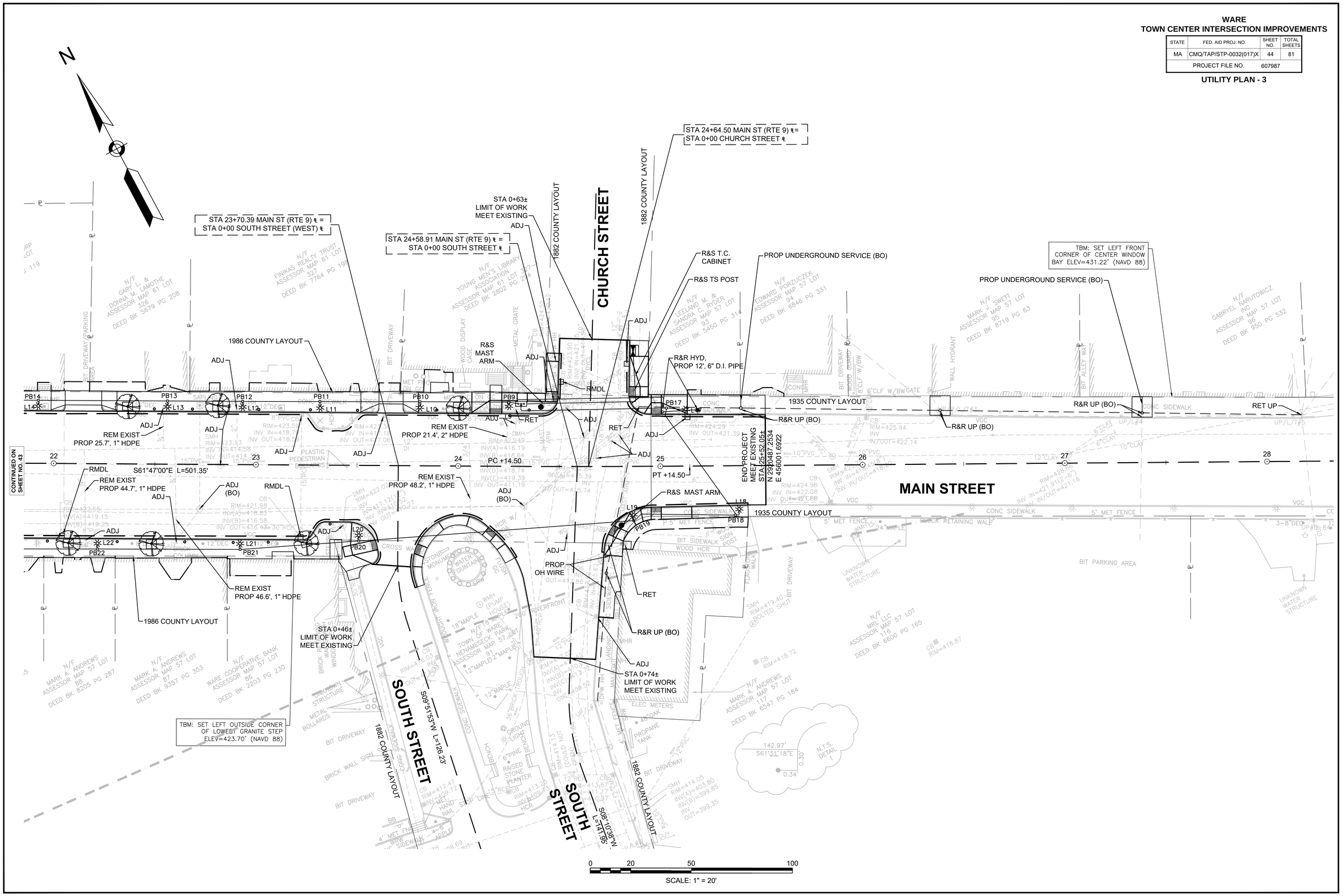


607987_HD(UT).DWG Plotted on 11-Jul-2019 9:07 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	44	81
PROJECT FILE NO.	607987		

UTILITY PLAN - 3

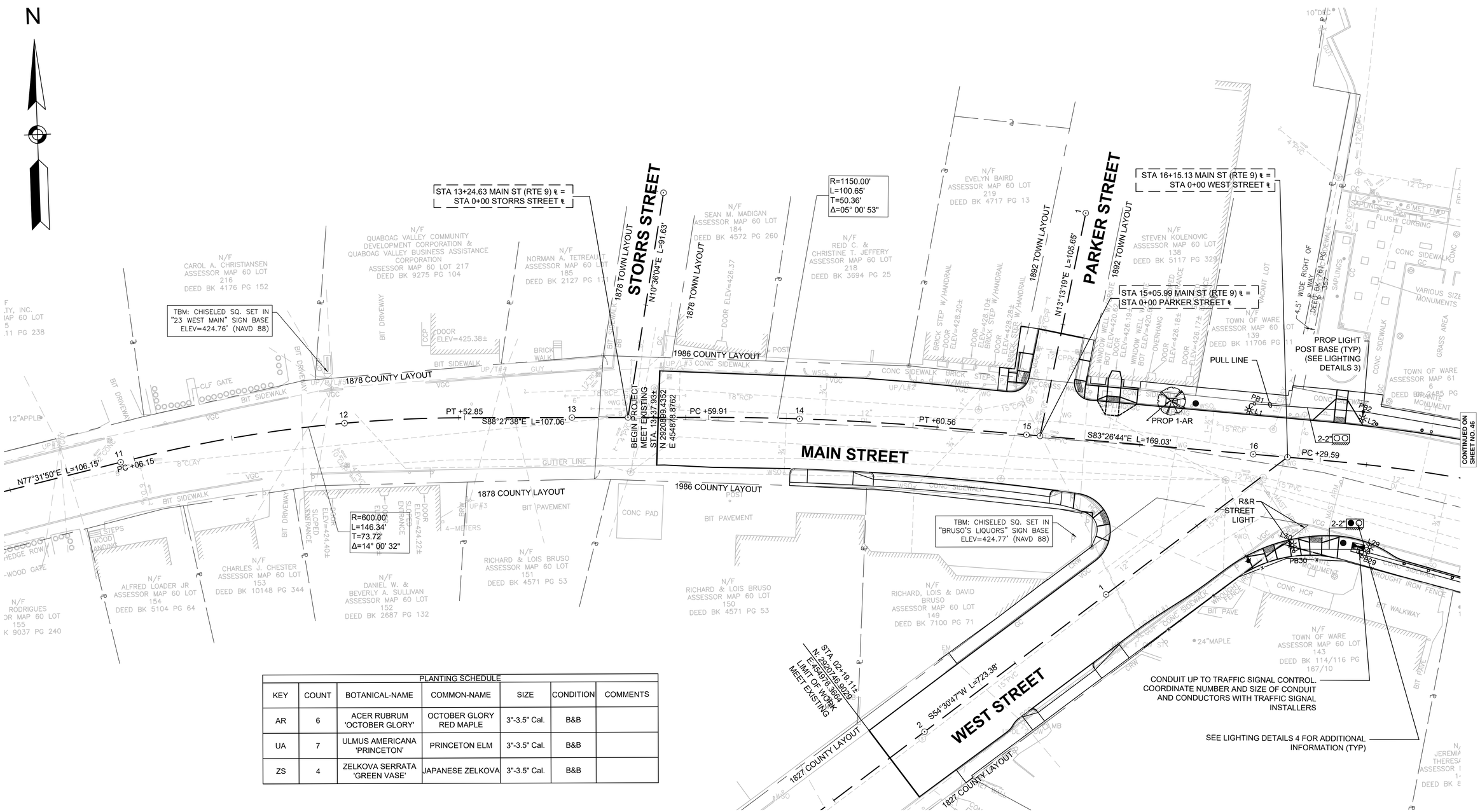


607987_HD(UT).DWG Plotted on 11-Jul-2019 9:07 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	45	81
PROJECT FILE NO.	607987		

LIGHTING & LANDSCAPING PLAN - 1



PLANTING SCHEDULE						
KEY	COUNT	BOTANICAL-NAME	COMMON-NAME	SIZE	CONDITION	COMMENTS
AR	6	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3"-3.5" Cal.	B&B	
UA	7	ULMUS AMERICANA 'PRINCETON'	PRINCETON ELM	3"-3.5" Cal.	B&B	
ZS	4	ZELKOVA SERRATA 'GREEN VASE'	JAPANESE ZELKOVA	3"-3.5" Cal.	B&B	

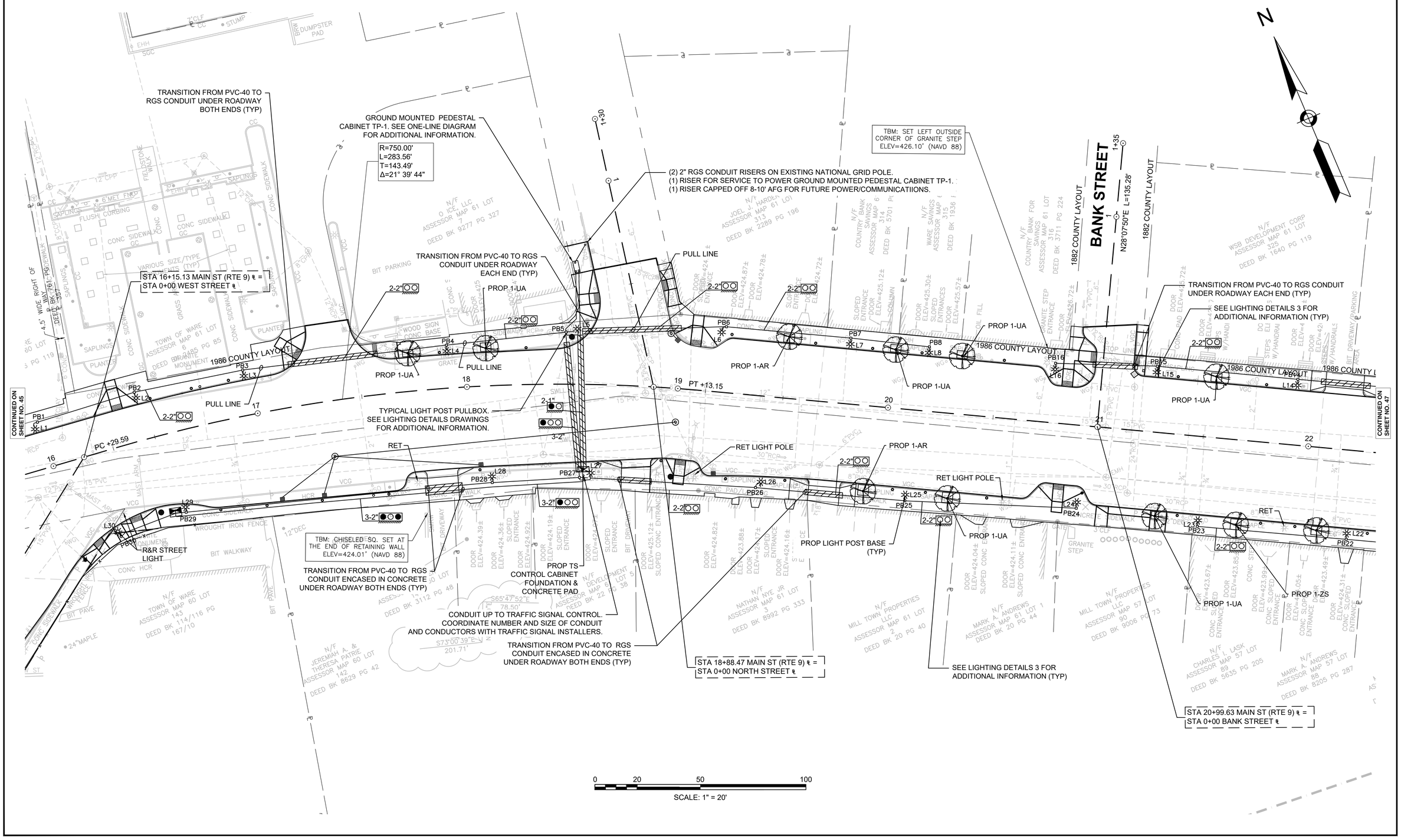
0 20 50 100
SCALE: 1" = 20'

607987_HD(LT).DWG Plotted on 11-Jul-2019 9:07 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	46	81
PROJECT FILE NO.	607987		

LIGHTING & LANDSCAPING PLAN - 2

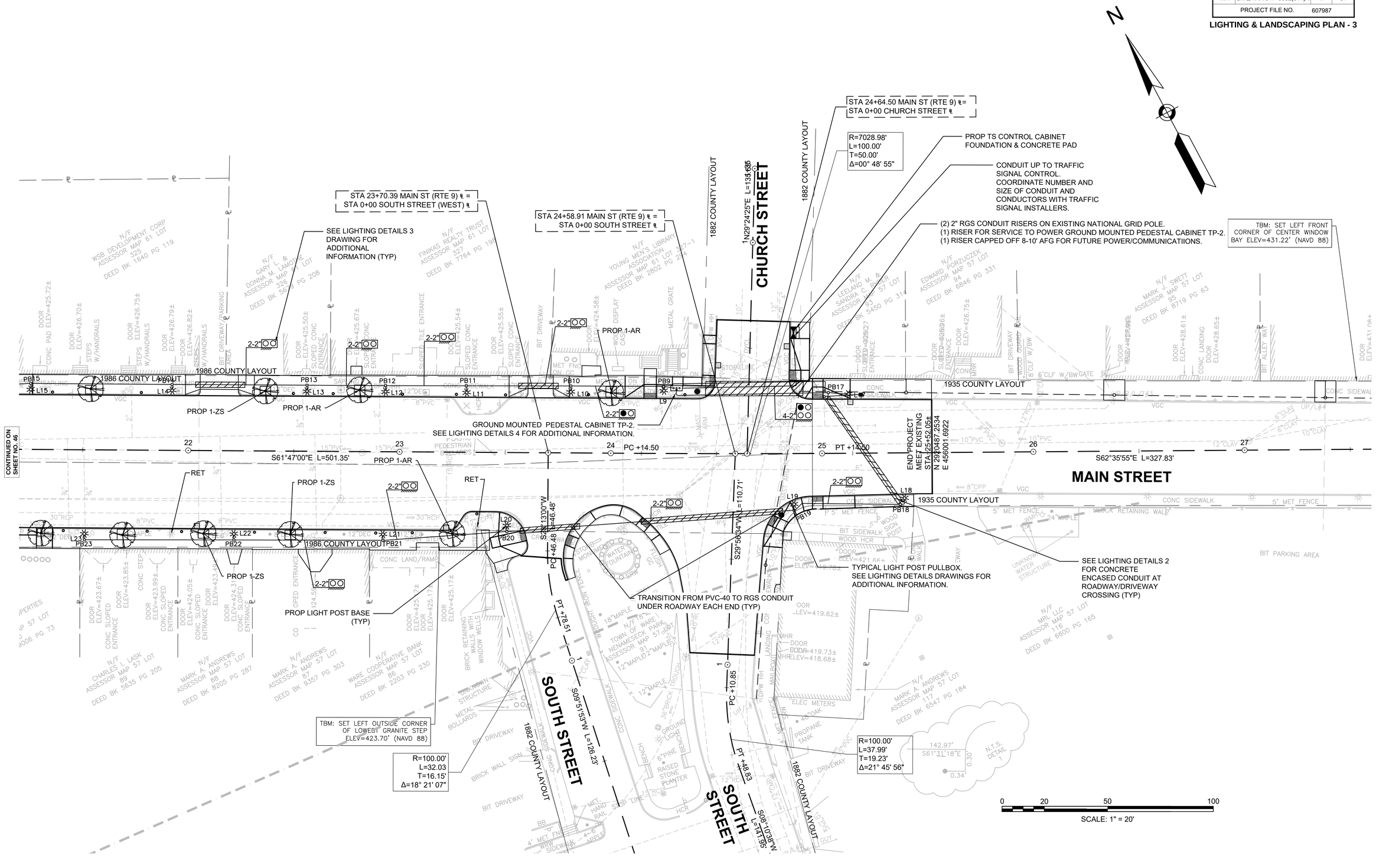


607987_HD(LT).DWG Plotted on 11-Jul-2019 9:07 AM

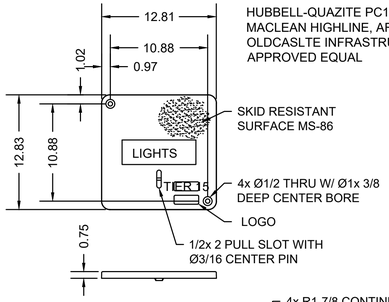
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	47	81
PROJECT FILE NO.	607987		

LIGHTING & LANDSCAPING PLAN - 3



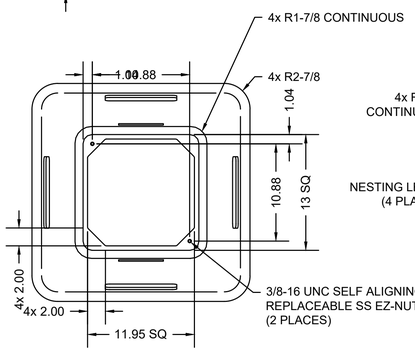
607987_HD(LT).DWG Plotted on 11-Jul-2019 9:07 AM

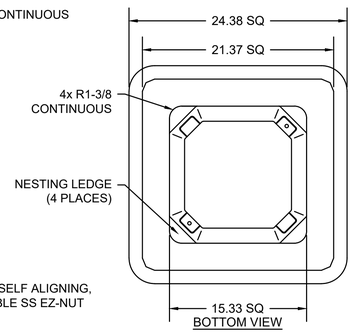


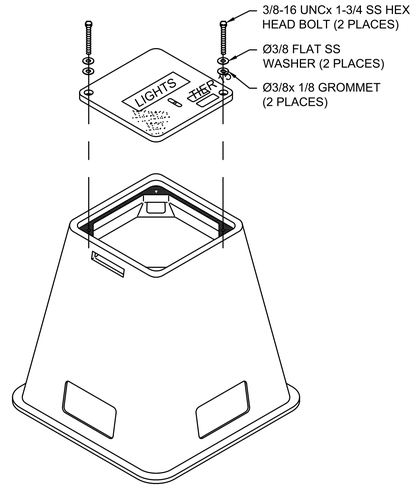
HUBBELL-QUAZITE PC1212HG00, MACLEAN HIGHLINE, ARMORCAST, OLDCASLTE INFRASTRUCTURE OR APPROVED EQUAL

LISTED

NOTES:
1. LOGO TO BE "LIGHTS"
2. THIS TIER 15 COVER IS RATED FOR A STATIC DESIGN LOAD OF 15,000 LBS. OVER A 10x 10 AREA AND MUST PASS A MINIMUM STATIC TEST LOAD OF 22,500 LBS.

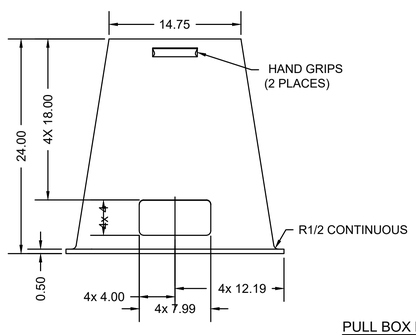


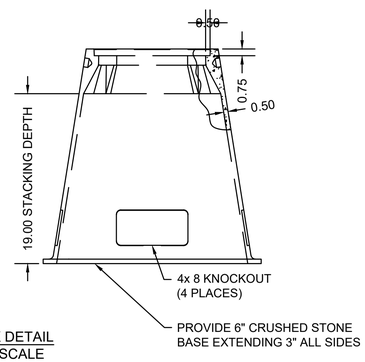




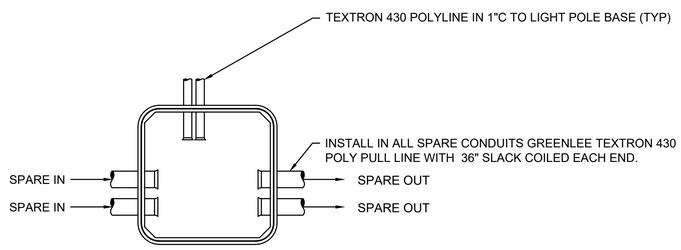
HUBBELL-QUAZITE, MACLEAN HIGHLINE, ARMORCREST, OLD CASTLE INFRASTRUCTURE OR APPROVED EQUAL

LISTED





PULL BOX DETAIL
NOT TO SCALE



PULL BOX CONDUIT PENETRATION DETAIL
NOT TO SCALE

GENERAL NOTES

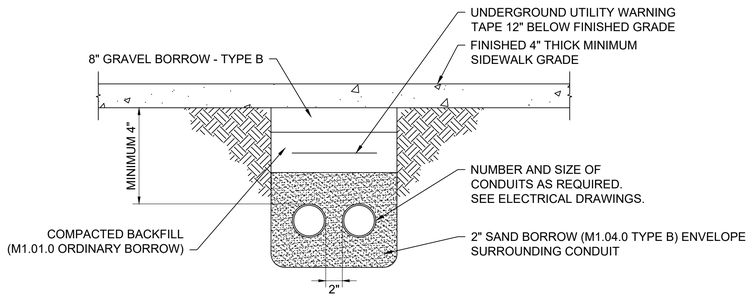
1. IN EACH HANDHOLE, PROVIDE TEXTRON POLYLINE 430 LOOPED WITH 6' SLACK.
2. EXISTING STREET LIGHTING TO REMAIN.
3. INSTALL (2) 2" PVC CONDUIT ENCASED IN CONCRETE AND CONDUCTORS TO UNDERGROUND DUCT BANK FROM LIGHTING DISTRIBUTION CABINET TO HANDHOLES IN THE SYSTEM AS SHOWN ON DRAWINGS.
4. TYPICAL DUCT BANK: PROVIDE (2) 2" PVC CONDUITS ENCASED IN CONCRETE. INSTALL NYLON PULL ROPE WITH 6 FEET SLACK EACH END.
5. TYPICAL HAND HOLE: PROVIDE HAND HOLE ADJACENT STREET LIGHT POLE BASE. PROVIDE CONDUIT ENTRANCE AND EXIT AT OPPOSITE ENDS WITH LOOP IN PULL IN LINE. PROVIDE 1" PVC CONDUIT WITH PULL LINE FROM HANDHOLE TO STREET LIGHT POLE BASE.
6. POWER SERVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE EXACT LOCATIONS WITH NATIONAL GRID POWER COMPANY PRIOR TO CONSTRUCTION.
7. ALL CONSTRUCTION MUST COMPLY WITH MASSDOT STANDARD SPECIFICATIONS, THE NATIONAL ELECTRIC CODE AND ALL UTILITY COMPANY REQUIREMENTS.
8. ALL EXPOSED METAL EQUIPMENT MUST BE GROUNDED.
9. REFER TO ELECTRICAL DETAIL SHEETS FOR POLE BASE DETAILS, UNDERGROUND CONDUIT DETAILS, AND HANDHOLE DETAILS.
10. ALL CONDUITS AND PULL BOXES SHALL BE INSTALLED IN ACCORDANCE WITH MASSDOT STANDARD SHEETS.
11. CONDUIT RUNS ARE SHOWN AS DIAGRAMMATIC UNLESS OTHERWISE NOTED. ALL CONDUITS TO BE ROUTED UNDER THE SIDEWALK WITH A MINIMUM 1'-0" FROM EDGE OF CURB. ALL CONDUIT ROUTING SHALL BE COORDINATED IN FIELD TO AVOID CONFLICTS WITH UNDERGROUND UTILITIES.

ABBREVIATIONS:

A	AMPERE(S)
AFG	ABOVE FINISHED GRADE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
C, CDT	CONDUIT
DWG	DRAWING
E	ELECTRIC
ELEC	ELECTRIC, ELECTRICAL
G, GND, GRD	GROUND
HH	HANDHOLE
IN	INCH
JB	JUNCTION BOX
MIN	MINIMUM
N	NEUTRAL
NTS	NOT TO SCALE
OAE	OR APPROVED EQUAL
PVC	POLYVINYL CHLORIDE
RGS	RIGID GALVANIZED STEEL (CONDUIT)
RGSC	RIGID GALVANIZED STEEL CONDUIT
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLT(S)
WP	WEATHERPROOF
ϕ	PHASE

607987_ELEC(DET_1).DWG Plotted on 22-Jul-2019 1:46 PM

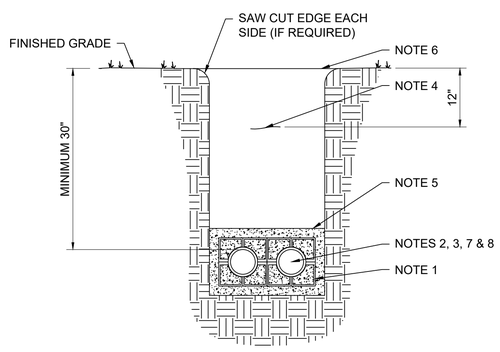
607987_ELEC(DET_2).DWG Plotted on 22-Jul-2019 1:46 PM



TRENCH NOTES

1. REPLACE EXISTING SURFACE CONDITIONS IN KIND, SEE CONSTRUCTION PLANS FOR SURFACE TREATMENT.
2. 30"MIN. OR 6" BELOW BOTTOM OF FROST LINE, WHICHEVER IS DEEPER.

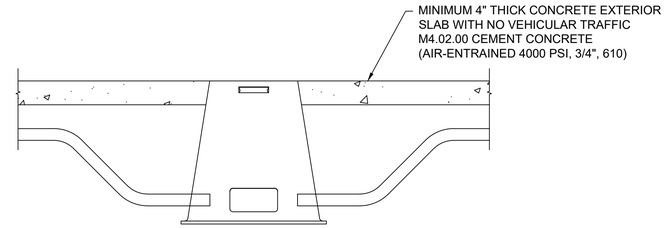
DUCT BANK DETAIL
NOT TO SCALE



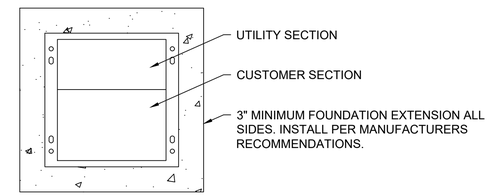
DUCT NOTES

1. PROVIDE SPACERS AT 5'-0" ON CENTER.
2. PROVIDE AS INDICATED ON CONTRACT DRAWINGS POLY LINE PULL LINE GREENLEE TEXTRON 430 OR APPROVED EQUAL IN EACH SPARE CONDUIT.
3. MINIMUM 24" RADIUS FOR CONDUIT BENDS.
4. PROVIDE 6" WIDE CONDUCTIVE MARKING TAPE BRADY 91296 OR APPROVED EQUAL LABELED: 'CAUTION: BURIED ELECTRIC LINE BELOW' (INSTALL ABOVE THE ENTIRE LENGTH OF THE DUCTBANK).
5. ENCASE CONDUITS WITH 2" COVER, ALL SIDES 3500 PSI CONCRETE. THE SLOPE OF DUCTBANK SHALL BE LIMITED TO 5% MAXIMUM. DUCTBANK SHALL BE SLOPED TOWARDS PULLBOX FOR DRAINAGE.
6. REPLACE EXISTING SURFACE CONDITIONS IN KIND, SEE CONSTRUCTION PLANS FOR SURFACE TREATMENT.
7. CONDUIT SIZE AND QUANTITY AS INDICATED ON PLAN(S).
8. UNDERGROUND CONDUIT SHALL TERMINATE IN HANDHOLES WITH BELL ENDS.

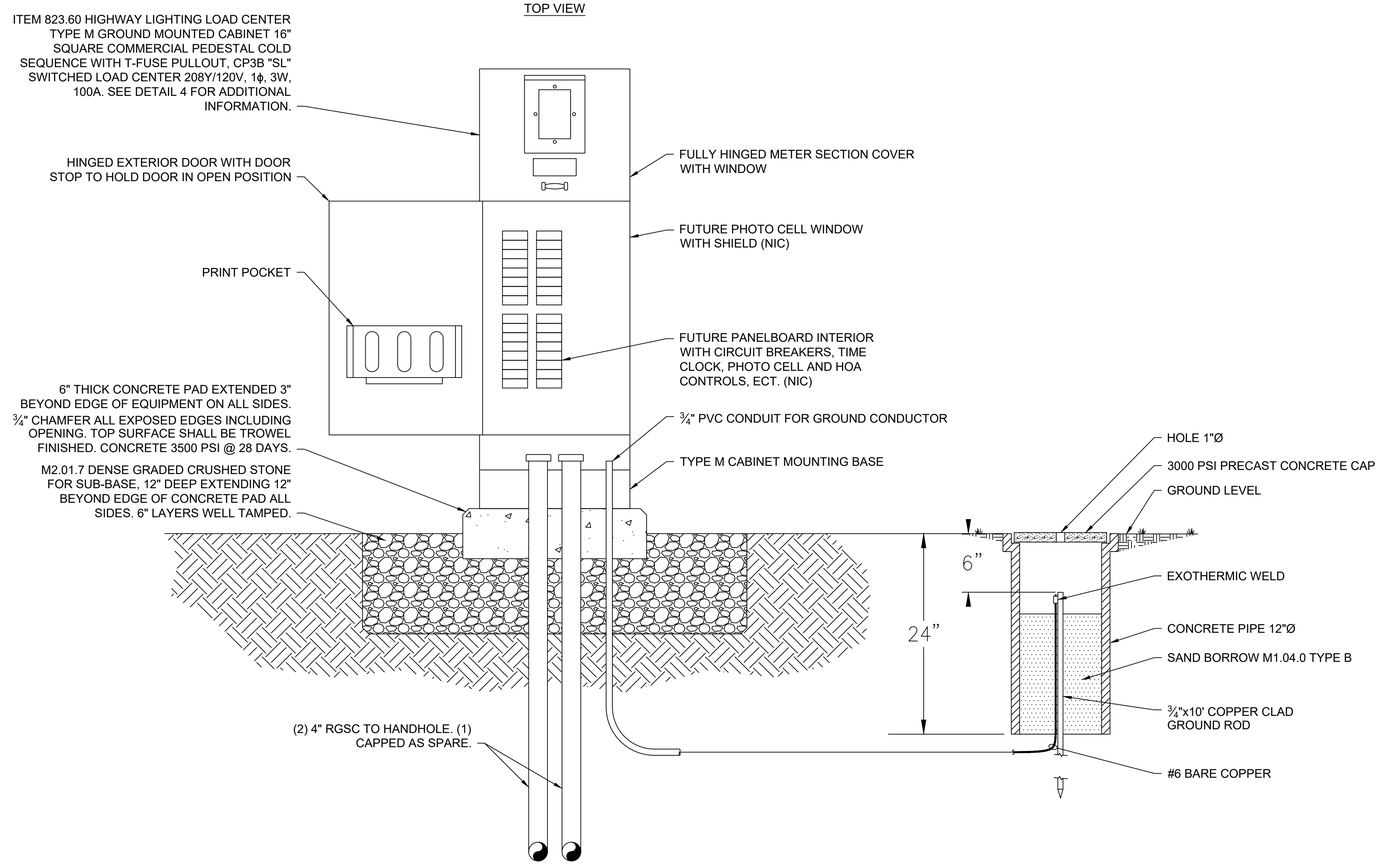
ENCASED CONCRETE DUCT BANK
NOT TO SCALE



CONDUIT TO HAND HOLE DETAIL
NOT TO SCALE



TOP VIEW

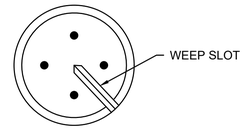


PAD MOUNTED ELECTRICAL
EQUIPMENT ENCLOSURE DETAIL
NOT TO SCALE

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	50	81
PROJECT FILE NO.	607987		

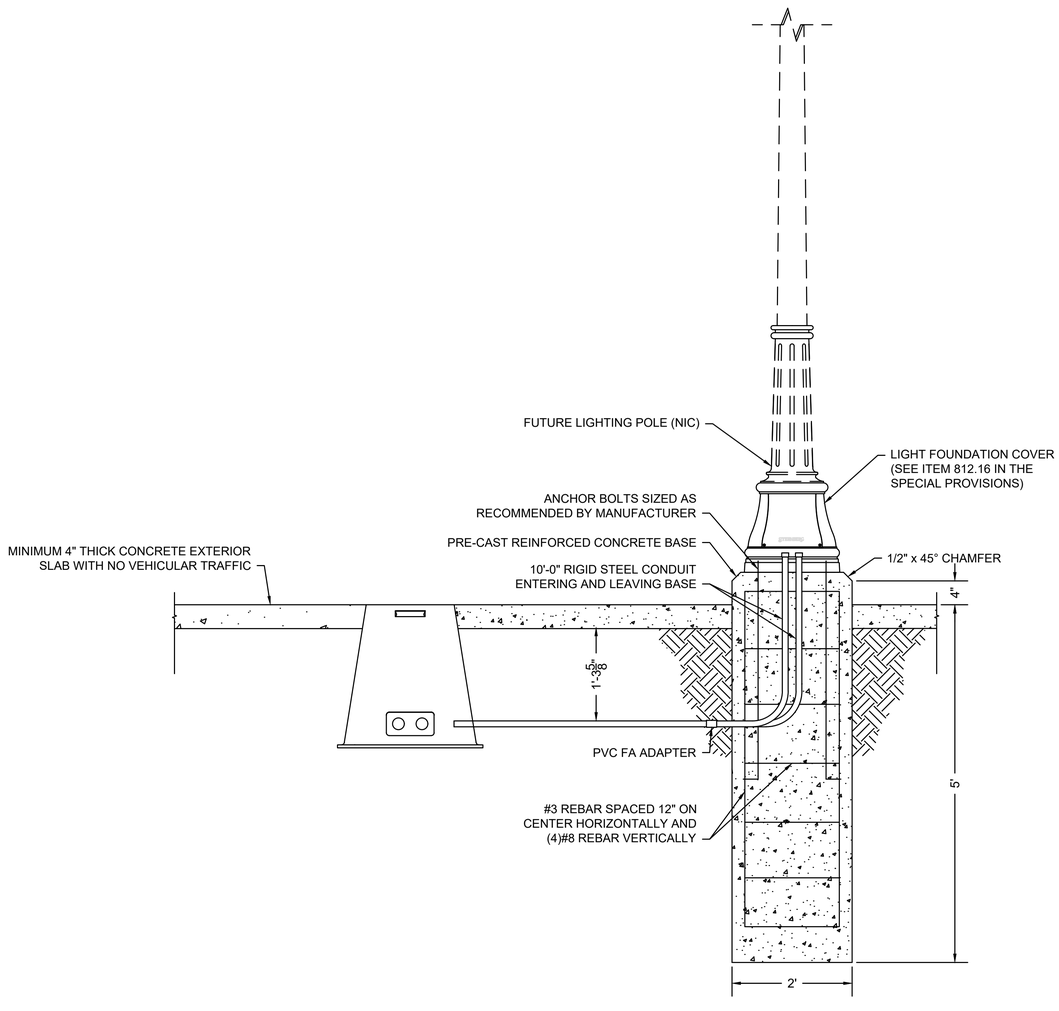
LIGHTING DETAILS - 3



POLE BASE TOP VIEW

NOTE:

THE PROPOSED POST BASE AND ALL ACCESSORIES SHALL BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.



POLE BASE DETAIL
NOT TO SCALE

607987_ELEC(DET_3).DWG Plotted on 22-Jul-2019 1:46 PM

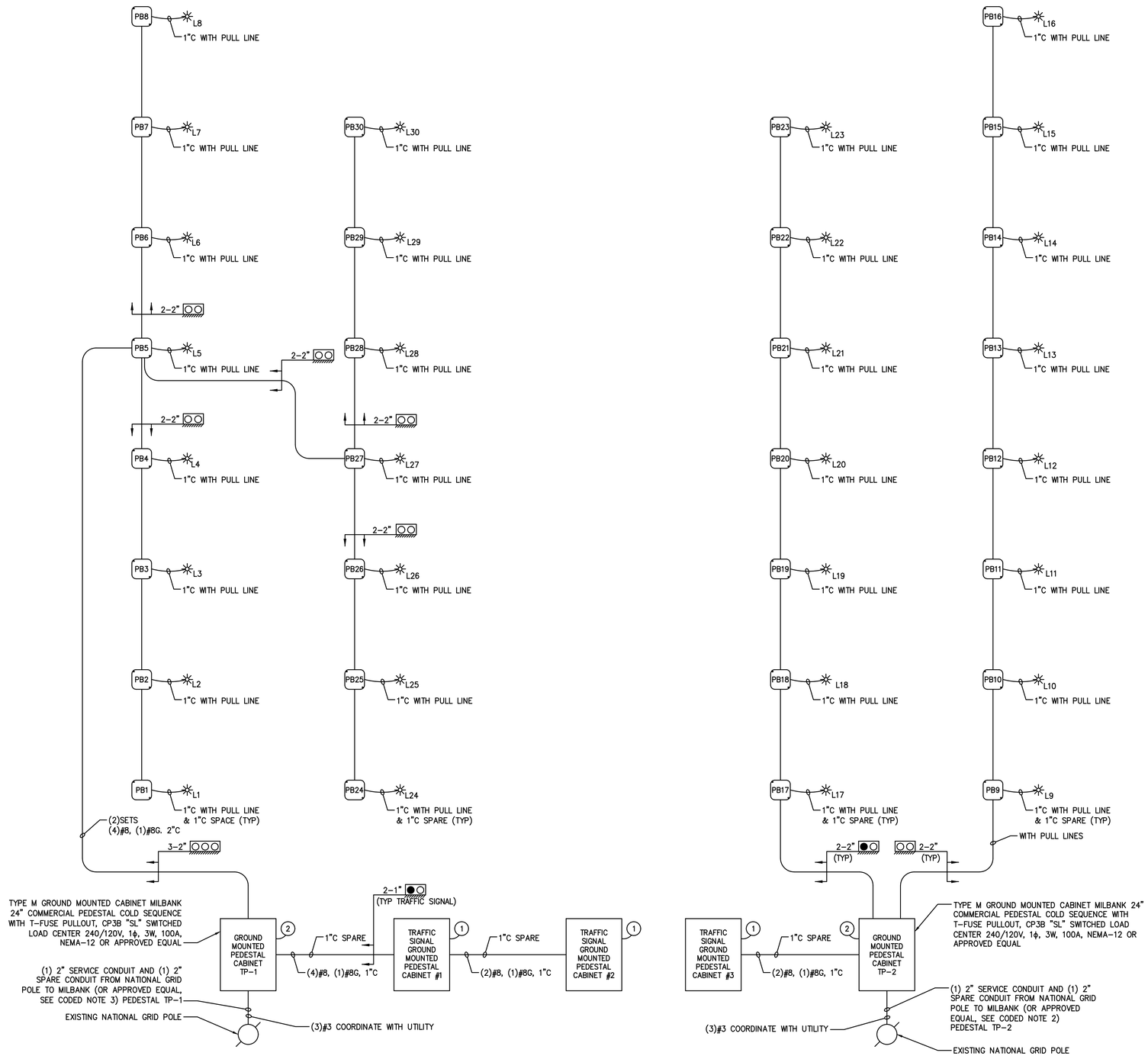
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	51	81
PROJECT FILE NO.	607987		

LIGHTING DETAILS - 4

CODED NOTES

1	PROPOSED TRAFFIC SIGNAL CONTROL BOX MOUNTED ON CONCRETE SLAB. COORDINATE LOCATION OF CONDUITS FROM PEDESTAL POWER PANEL TO TRAFFIC SIGNAL CONTROL BOX. PROVIDE CONDUCTOR NUMBER, TYPE, AND SIZE AS RECOMMENDED BY TRAFFIC SIGNAL MANUFACTURER.
2	PROVIDE ELECTRICAL COMMERCIAL PEDESTAL DISTRIBUTION PANEL MOUNTED ON PEDESTAL MOUNTING BASE WITH METER SOCKET ONLY (LESS INTERIOR PANELBOARD, PHOTO CONTROL, TIME CLOCK, HOA CONTROL, CONTRACTOR ECT.) AS MANUFACTURE BY MILBANK (SERIES CP3B), STRONG BOX, MYERS POWER PRODUCTS INC., TESCO CONTROLS OR APPROVED EQUAL.
3	PROVIDE TAP ON LOAD SIDE OF PULL OUT TO SERVE TRAFFIC CONTROL CABINETS. PROVIDE INLINE FUSING OF THE TYPE AND SIZE FOR TRAFFIC CONTROL CABINETS AS RECOMMENDED BY TRAFFIC SIGNAL MANUFACTURER.



LEGEND:

- - -UE- - - -UE- - - UNDERGROUND CONDUIT AND CONDUCTORS
——————— EXPOSED CONDUIT AND CONDUCTORS
⊠ EXISTING ELECTRICAL BOX (STREET LIGHTING)
J JUNCTION BOX
UNDERGROUND HANDHOLE HUBBELL-QUAZITE PX1212B500 SERIES WITH PC1212HG00 SERIES COVER OR APPROVED EQUAL
LIGHT POLE BASE.
ED MILBANK LIGHTING DISTRIBUTION PEDESTAL. SEE DETAIL DRAWINGS FOR ADDITIONAL INFORMATION.

DUCTBANK CROSS SECTION, SYMBOLS INDICATE WORK AS FOLLOWS:

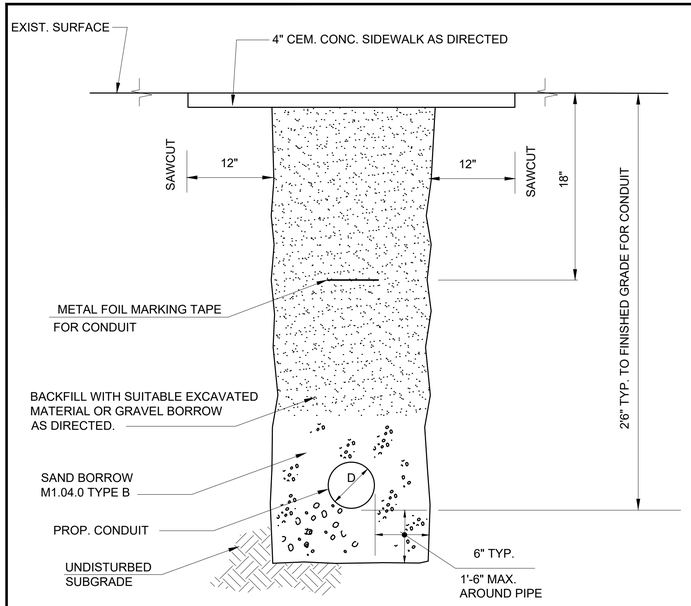
4-2"
- 4-2" — INDICATES SIZE AND NUMBER OF CONDUIT(S) IN DUCTBANK
- ● — INDICATES INSTALLATION OF POWER CONDUCTORS
- ○ — INDICATES AN EMPTY CONDUIT
- ⊖ — INDICATES COMMUNICATIONS OR CONTROL SIGNAL CONDUIT
- INDICATES BOTTOM OF DUCTBANK

607987_ELEC(DET_4).DWG Plotted on 22-Jul-2019 1:46 PM

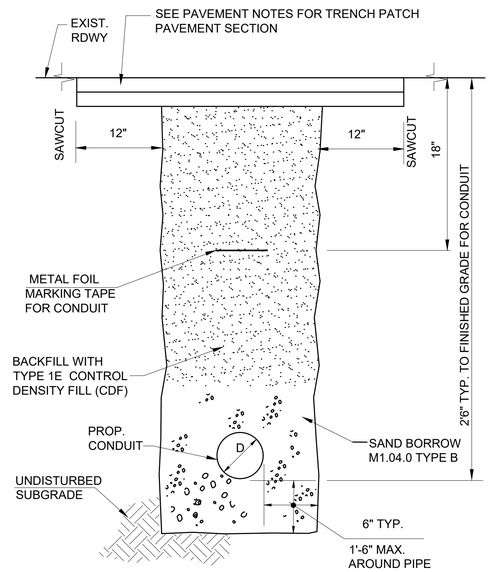
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	52	81
PROJECT FILE NO.	607987		

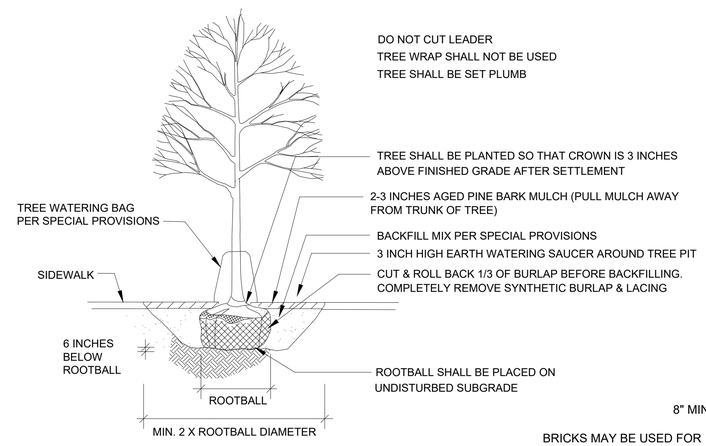
CONSTRUCTION DETAILS - 1



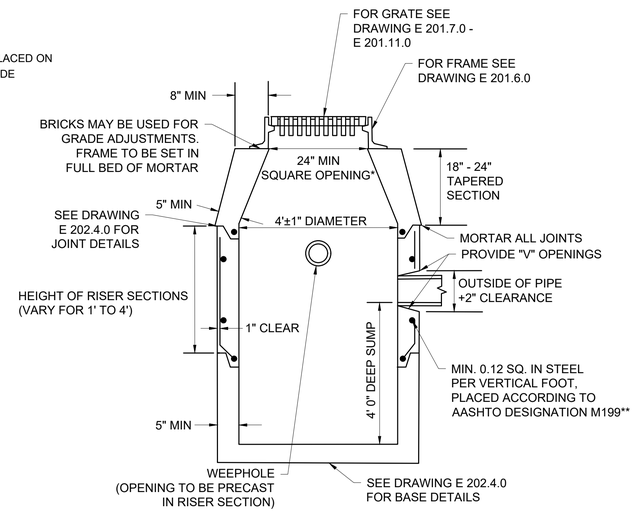
TRAFFIC CONDUIT TRENCH PATCH DETAIL (OUTSIDE ROADWAY)
NOT TO SCALE



TRAFFIC CONDUIT TRENCH PATCH DETAIL (IN ROADWAY)
NOT TO SCALE



DECIDUOUS TREE PLANTING
NOT TO SCALE



* WHEN A CURB INLET IS INSTALLED, THE OPENING IS TO BE 24"±1" X 27"±1"
** REINFORCING STEEL BASED ON A WALL THICKNESS OF 5".

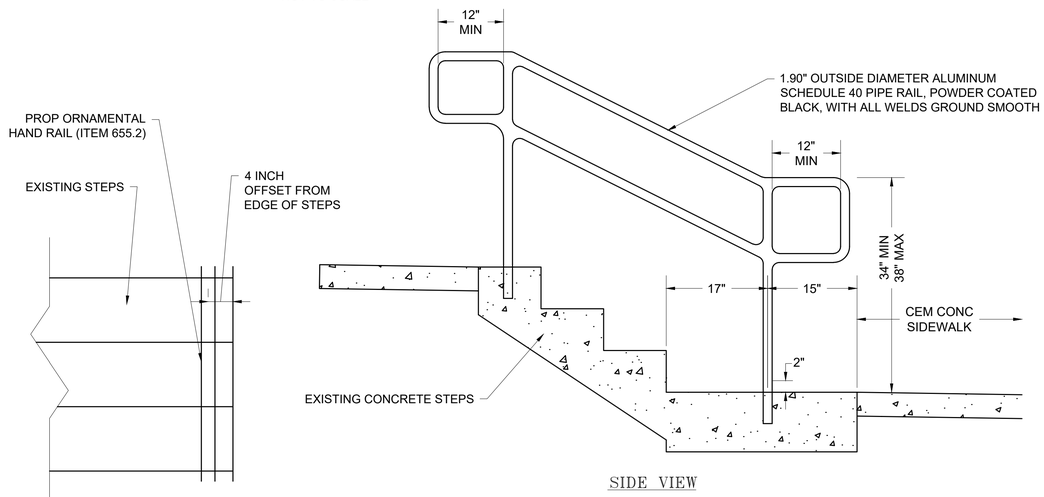
NOTES:
1. DETAILS NOT INDICATED ABOVE ARE TO BE SIMILAR TO THOSE SHOWN ON E 201.3.0

2. FACE OF PIPE FLUSH OR NOT TO PROJECT MORE THAN 4" FROM FACE OF WALL ALONG CENTERLINE OF PIPE.

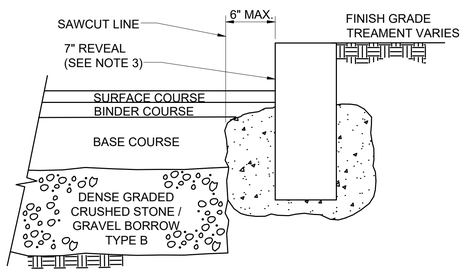
3. FOR DESCRIPTION, MATERIALS AND CONSTRUCTION METHOD, SEE STANDARD SPECIFICATIONS.

4. ALL CONCRETE TO BE AIR ENTRAINED.

DEEP SUMP CATCH BASIN
NOT TO SCALE



ORNAMENTAL HAND RAIL
STA 23+08 LT & 23+19 LT
NOT TO SCALE

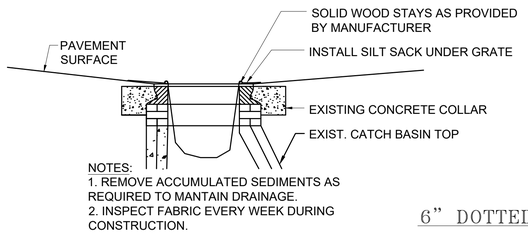


NOTES:
1. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE TO THE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED: ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT TO BE USED AS A SUBSTITUTE.

2. PAYMENT PER FOOT OF CURB IS EXCLUSIVE OF ALL ITEMS OF WORK REQUIRED TO COMPLETE PROPER INSTALLATION OF CURB.

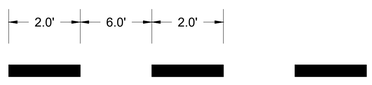
3. THE REVEAL IS TO BE 7" UNDER ALL CONDITIONS.

GRANITE CURB
NOT TO SCALE

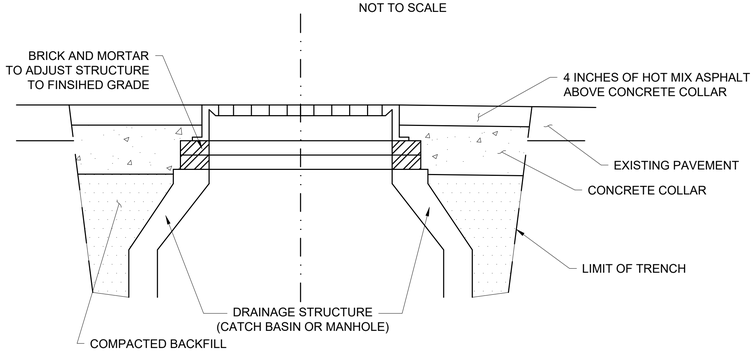


NOTES:
1. REMOVE ACCUMULATED SEDIMENTS AS REQUIRED TO MANTAIN DRAINAGE.
2. INSPECT FABRIC EVERY WEEK DURING CONSTRUCTION.

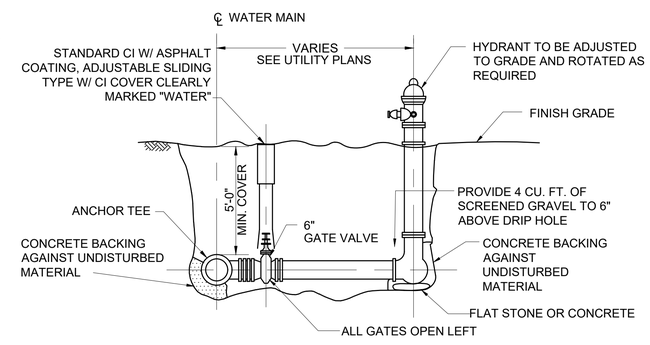
SILT SACK
NOT TO SCALE



6" DOTTED LINE EXTENSION (DWLEX/DYLEX) DETAIL
NOT TO SCALE



CONCRETE COLLAR AROUND DRAINAGE STRUCTURES
NOT TO SCALE



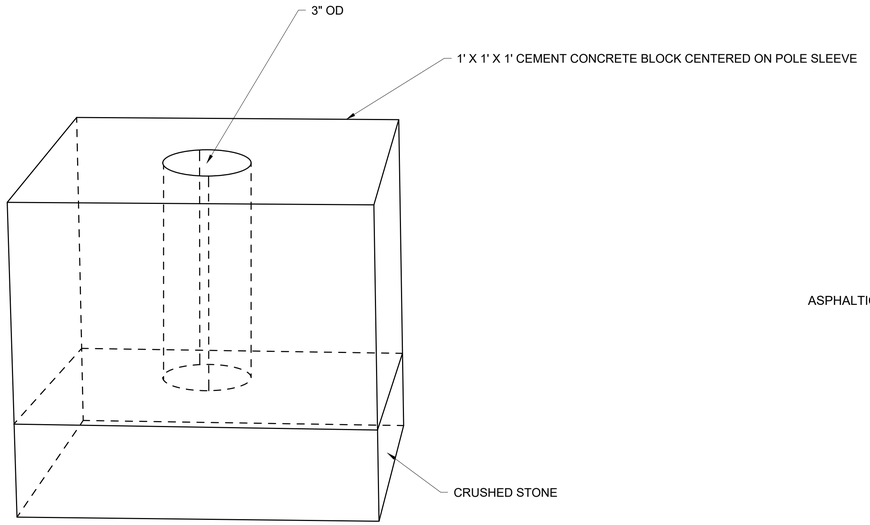
TYPICAL HYDRANT AND VALVE DETAIL
NOT TO SCALE

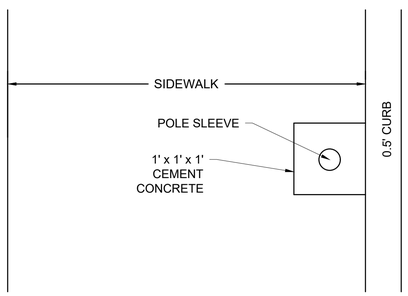
607987_HDIDET1_2018_ADDENDUM 1.DWG Plotted on 6-Nov-2019 1:20 PM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	53	81
PROJECT FILE NO.	607987		

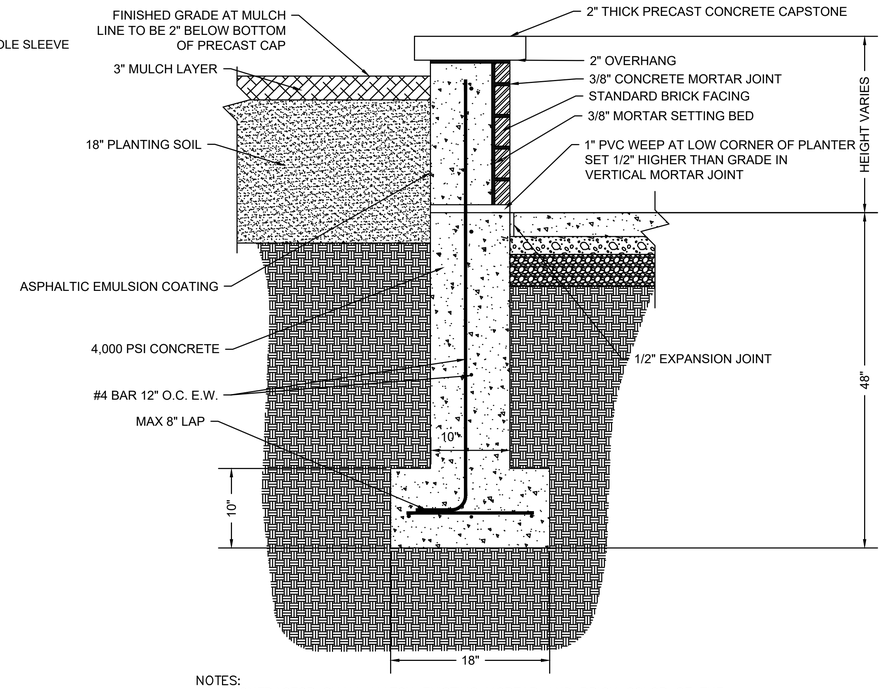
CONSTRUCTION DETAILS - 2





POLE SLEEVE

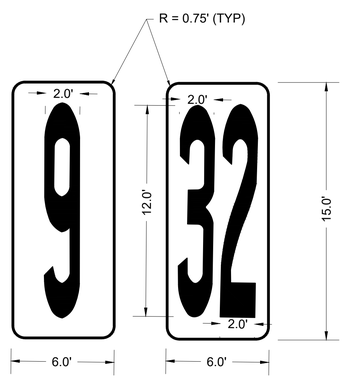
NOT TO SCALE



NOTES:
1. CONTRACTOR SHALL MATCH EXISTING MORTAR AND BRICK COLOR OF THE EXISTING ADJACENT BUILDING
2. BRICK FACING AND WALL ARE ASSUMED TO BE STRUCTURALLY SOUND ON THE ADJACENT BUILDING. THIS SHALL BE CONFIRMED BY THE CONTRACTOR AND DIFFERENCES REPORT TO THE ENGINEER PRIOR TO EXECUTING THE WORK.
3. PLANTER SHALL BE PINNED TO EXISTING FOUNDATION WALL WITH STAINLESS STEEL RODS , 12" MIN EMBEDMENT WITH EPOXY.
4. WATERPOOFING SHALL BE APPLIED TO THE EXISTING FOUNDATION TO SEAL ALL EXPOSED AREAS THAT WILL BE IN CONTACT WITH SOIL

BRICK PLANTER WALL SECTION DETAIL

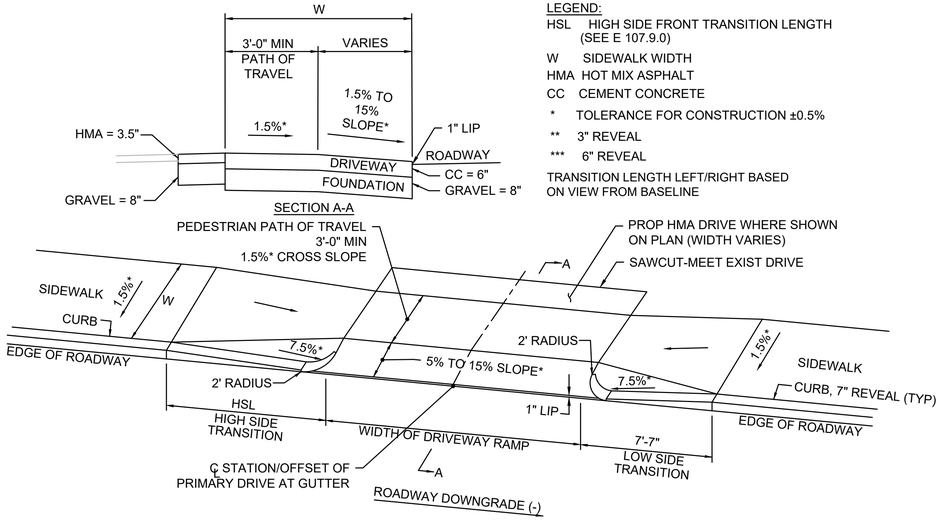
NOT TO SCALE



STATE ROUTE STRIPING DETAIL

NOT TO SCALE

607987_HD(DET).DWG Plotted on 11-Jul-2019 9:08 AM



LEGEND:

HSL HIGH SIDE FRONT TRANSITION LENGTH (SEE E 107.9.0)

W SIDEWALK WIDTH

HMA HOT MIX ASPHALT

CC CEMENT CONCRETE

* TOLERANCE FOR CONSTRUCTION ±0.5%

** 3" REVEAL

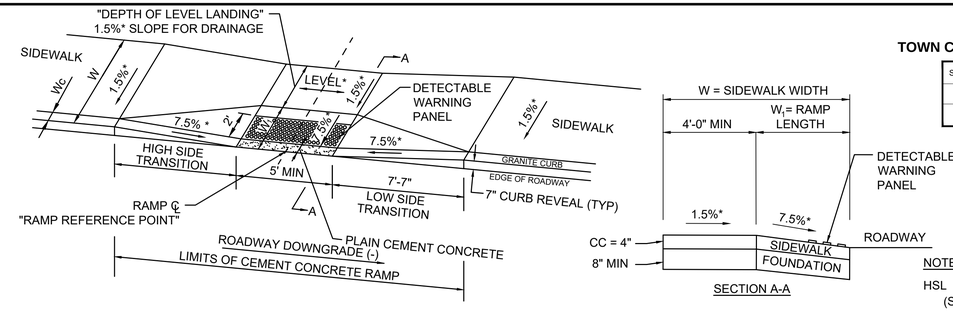
*** 6" REVEAL

TRANSITION LENGTH LEFT/RIGHT BASED ON VIEW FROM BASELINE

SIDEWALK THROUGH DRIVEWAYS WITH CURB RETURNS

N.T.S.

DWY #	ALIGNMENT	DWY REFERENCE POINT ℄		MIN. WIDTH OF SIDEWALK (W)	WIDTH OF PEDESTRIAN PATH OF TRAVEL (MIN 3.00')	ROADWAY GUTTER	TRANSITION LENGTH	
		STATION	OFFSET				LEFT	RIGHT
1	MAIN STREET	14+75	22.1 RT	6.00'	3.00'	-1.67%	5.00'**	9.00'***
2	MAIN STREET	17+85	38.2 RT	14.49'	11.50'	0.28%	7.58'	8.95'
3	MAIN STREET	18+82	34.7 RT	13.51'	10.58'	1.16%	3.25'**,4,4	8.95'
4	MAIN STREET	19+73	37.0 RT	10.25'	7.13'	0.54%	7.58'	8.95'
6	MAIN STREET	22+15	26.0 LT	9.44'	7.07'	-0.45%	7.00'	7.58'
7	MAIN STREET	23+67	26.0 LT	9.99'	5.96'	-0.91%	8.95'	7.58'
8	WEST STREET	1+40	20.2 LT	7.22'	4.72'	-5.29%	15.00'	6.50'



WARE

TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	54	79
PROJECT FILE NO.	607987		

WHEELCHAIR RAMP DETAILS-1

WHEELCHAIR RAMP WITH LESS THAN 12'-4" SIDEWALK

REFER TO MASSDOT STD. DTL. E 107.2.1

NOT TO SCALE

WCR #	ALIGNMENT	RAMP REFERENCE POINT		WIDTH OF SIDEWALK (W)	LENGTH OF PRIMARY RAMP (W_1)	WIDTH OF RAMP OPENING Min. 5.0'	ROADWAY SLOPE (%)	TRANSITION LENGTH	
		STATION	OFFSET					LEFT	RIGHT
3***	MAIN ST	15+37	17.5 LT	6.5'	2.5'	5.7'	***	4.00'****	7.58'
5	WEST ST	0+30	25.9 LT	6.2'	2.5'	5.0'	-3.99%	7.00'***	7.58'
6	MAIN ST	16+31	33.5 RT	8.4'	2.5'	5.0'	-0.90%	7.58'	4.76'**
10	NORTH ST	0+47	15.8 LT	10.1'	4.8'	5.0'	2.58%	7.58'	11.00'
11	NORTH ST	0+46	14.3 RT	6.4'	2.5'	5.0'	-2.58%	4.63***	7.76'
26***	SOUTH ST	0+30	17.7 LT	8.0'	4.0'	5.0'	***	10.50'**	10.70'

NOTES:

HSL HIGH SIDE FRONT TRANSITION LENGTH (SEE E 107.9.0)

W SIDEWALK WIDTH

W_1 PRIMARY RAMP LENGTH

* TOLERANCE FOR CONSTRUCTION ±0.5%

** TRANSITION TO 3" REVEAL

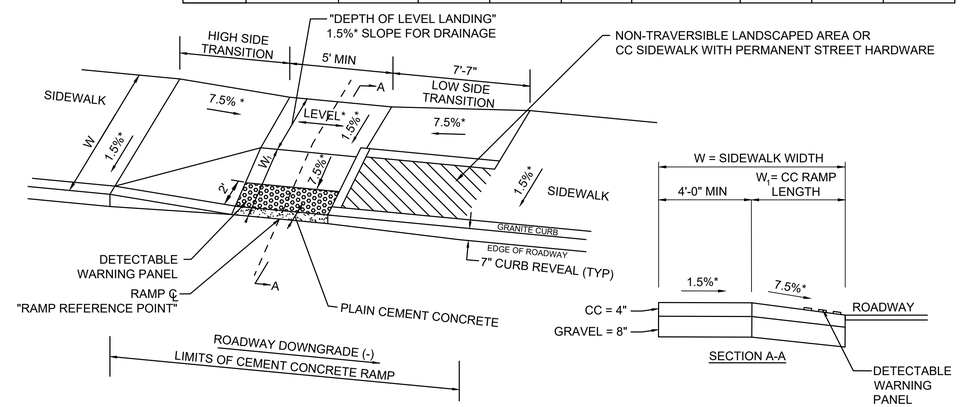
*** REFER TO WHEELCHAIR RAMP GRADING DIAGRAMS SHEETS 56-57.

USABLE SIDEWALK WIDTH PER AAB = W-Wc

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

WHEELCHAIR RAMPS WILL BE FITTED WITH DETECTABLE WARNING PANELS (SEE E 107.6.5)

THE GUTTER SLOPE AT THE RAMP THRESHOLD SHALL BE 1.5% MAX.



NOTES:

HSL HIGH SIDE FRONT TRANSITION LENGTH (SEE E 107.9.0)

W SIDEWALK WIDTH

W_1 PRIMARY RAMP LENGTH

W_2 BUILT UP HMA RAMP LENGTH

* TOLERANCE FOR CONSTRUCTION ±0.5%

** TRANSITION TO 3" REVEAL

USABLE SIDEWALK WIDTH PER AAB = W-Wc

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

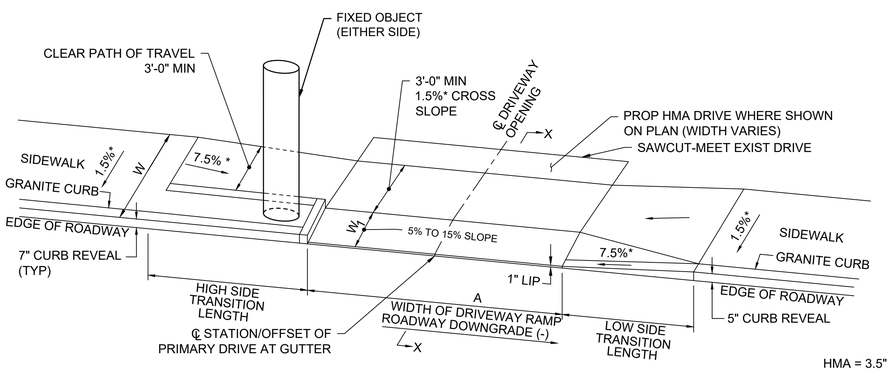
WHEELCHAIR RAMPS WILL BE FITTED WITH DETECTABLE WARNING PANELS (SEE E 107.6.5)

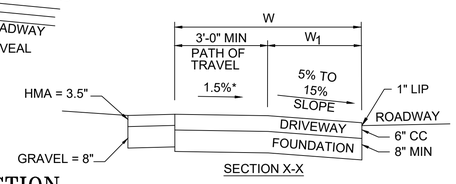
WHEELCHAIR RAMP WITH TRANSITION OBSTRUCTION

REFER TO MASSDOT STD. DTL. E 107.2.1

NOT TO SCALE

WCR #	ALIGNMENT	RAMP REFERENCE POINT		WIDTH OF SIDEWALK W	LENGTH OF PRIMARY RAMP W_1	WIDTH OF RAMP OPENING Min. 5.0'	ROADWAY SLOPE (%)	TRANSITION LENGTH	
		STATION	OFFSET					LEFT	RIGHT
21	MAIN ST	24+18	26.0 LT	10.8'	6.6'	5.0'	-0.65%	8.95'	7.58'





NOTES:

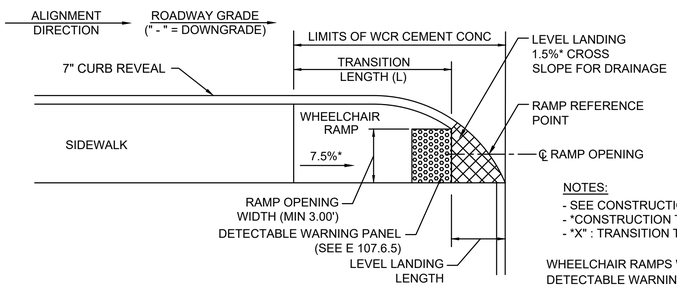
- *CONSTRUCTION TOLERANCE ±0.5%

*** = TRANSITION TO A 5" REVEAL

SIDEWALK THROUGH DRIVEWAYS WITH RAMP OBSTRUCTION

NOT TO SCALE

DWY #	ALIGNMENT	DWY REFERENCE POINT ℄		MIN. WIDTH OF SIDEWALK (W)	WIDTH OF PEDESTRIAN PATH OF TRAVEL (MIN 3.00')	ROADWAY GUTTER	TRANSITION LENGTH	
		STATION	OFFSET				LEFT	RIGHT
5	MAIN STREET	21+18	22.1 RT	9.28'	5.35'	-0.14%	7.58'	5.77'***



NOTES:

- SEE CONSTRUCTION STANDARD E 107.6.0
- *CONSTRUCTION TOLERANCE ±0.5%
- *X" : TRANSITION TO X" REVEAL

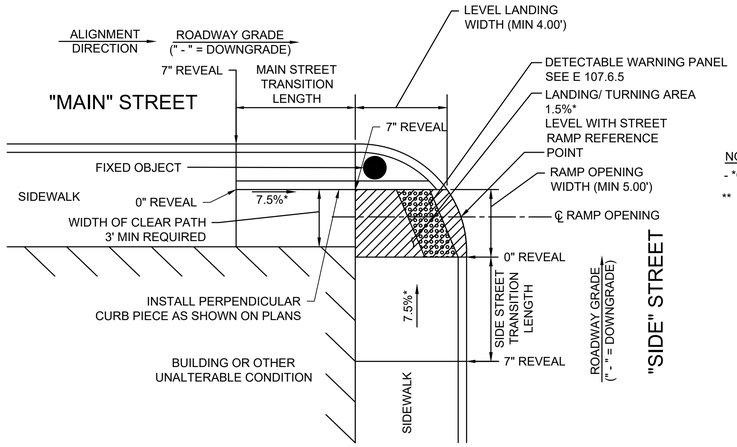
WHEELCHAIR RAMPS WILL BE FITTED WITH DETECTABLE WARNING PANELS (SEE E 107.6.5)

WHEELCHAIR RAMP FOR ONE CONTINUOUS DIRECTION OF PEDESTRIAN TRAVEL

N.T.S.

WCR #	ALIGNMENT	RAMP REFERENCE POINT		LENGTH OF LEVEL LANDING	WIDTH OF RAMP (MIN 3.00')	WIDTH OF SIDEWALK (W)	TRANSITION	
		STATION	OFFSET				ROADWAY GUTTER (±)	L
9	MAIN STREET	17+54	21.8 LT	6.07'	5.00'	7.98'	0.50%	11.72'

607987_HDWCR1.DWG Plotted on 11-Jul-2019 9:08 AM



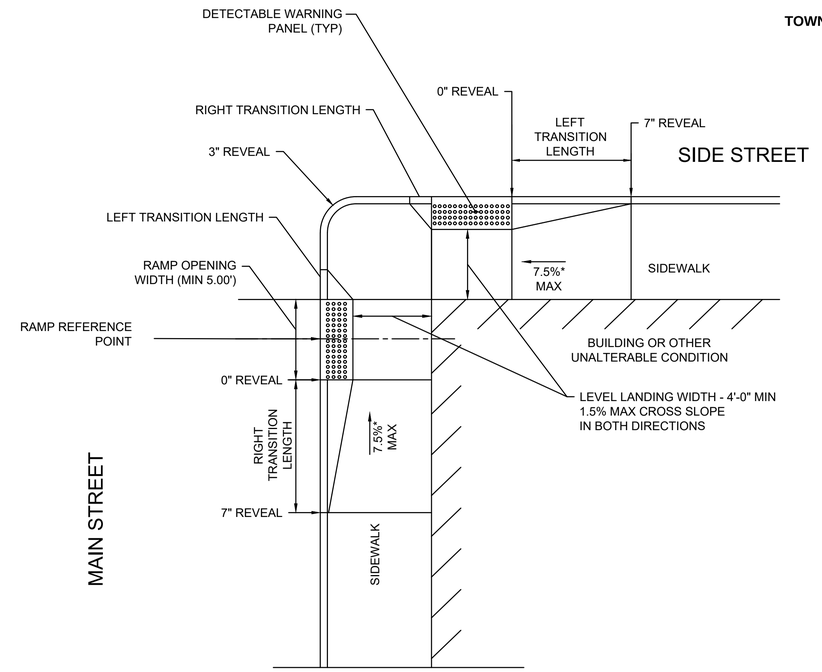
NOTES:
- *CONSTRUCTION TOLERANCE ±0.5%
** TRANSITION TO 3" REVEAL

"T" INTERSECTION WHEELCHAIR RAMP WITH RAMP OBSTRUCTION

N.T.S.

WCR #	ALIGNMENT	RAMP REFERENCE POINT		LEVEL LANDING WIDTH	RAMP OPENING WIDTH	MAIN STREET TRANSITION				SIDE STREET TRANSITION		
		STATION	OFFSET			WIDTH OF SIDEWALK	ROADWAY GUTTER	LENGTH	WIDTH OF CLEAR PATH	WIDTH OF SIDEWALK	ROADWAY GUTTER	LENGTH
1*	MAIN STREET	14+99	25.0' LT	4.0'	5.1'	7.96'	3.00%	3.80'*	4.0'	5.5'	3.30%	8.00'
2*	MAIN STREET	15+19	22.6' LT	4.5'	5.0'	6.5'	-0.20%	5.8'*	4.4'	5.0'	1.51%	9.00'
17*	BANK STREET	0+33	14.6' RT	5.1'	5.1'	9.67'	0.48%	6.62'	5.0'	4.9'	-2.26%	11.00'**
22	CHURCH STREET	0+34	16.1' LT	6.1'	5.0'	10.4'	-1.34%	8.95'	3.0'	5.6'	-4.12%	15.00'

*REFER TO WHEELCHAIR RAMP GRADING DIAGRAMS SHEETS 56-57.
** = TRANSITION TO 6 INCH REVEAL

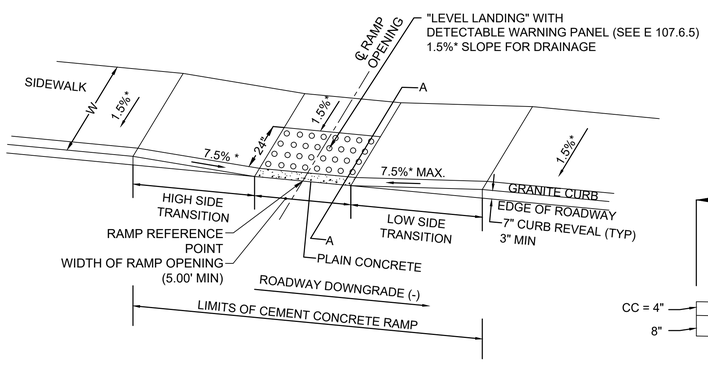


NOTES:
- *CONSTRUCTION TOLERANCE ±0.5%
** TRANSITION TO 3" REVEAL
THE GUTTER SLOPE AT THE RAMP THRESHOLD SHALL BE 1.5% MAX.

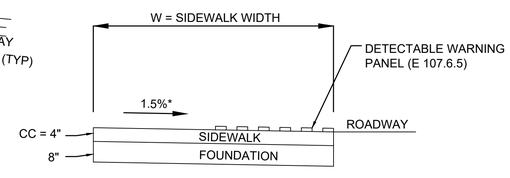
"T" INTERSECTION WHEELCHAIR RAMP

N.T.S.

WCR #	ALIGNMENT	RAMP REFERENCE POINT		LEVEL LANDING WIDTH	RAMP OPENING WIDTH	MAIN STREET TRANSITION				SIDE STREET TRANSITION			
		STATION	OFFSET			WIDTH OF SIDEWALK	ROADWAY GUTTER	RIGHT	LEFT	WIDTH OF SIDEWALK	ROADWAY GUTTER	RIGHT	LEFT
23/24	MAIN/CHURCH ST	0+38	18.9 RT	4.00'	5.00'	9.8'	2.50%	12.83'	3.25'**	9.5'	5.65%	3.25'**	15.00'



NOTES:
- *CONSTRUCTION TOLERANCE ±0.5%
- **TRANSITION TO 3" CURB REVEAL
- ***TRANSITION CURB ONLY; NO SW PRESENT
THE GUTTER SLOPE AT THE RAMP THRESHOLD SHALL BE 1.5% MAX.



SECTION A-A

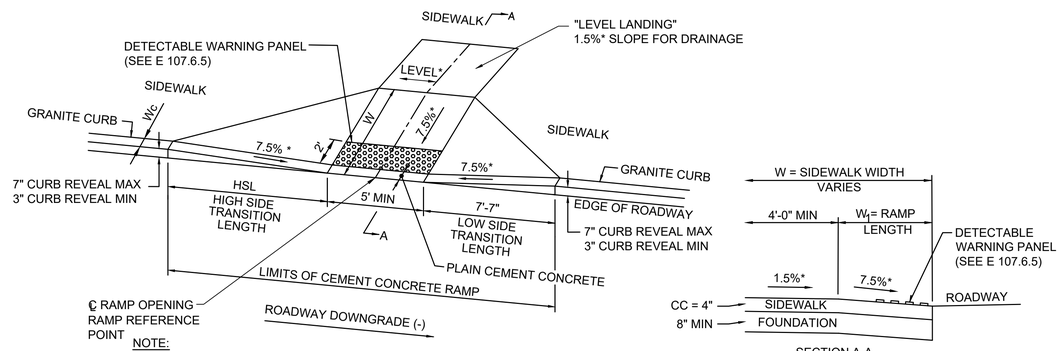
WHEELCHAIR RAMP – NARROW SIDEWALK

REFER TO MASSDOT STD. DTL. E 107.2.1

N.T.S.

WCR #	ALIGNMENT	RAMP REFERENCE POINT		WIDTH OF SIDEWALK (W)	WIDTH OF RAMP OPENING MIN 5.0'	ROADWAY SLOPE (%)	TRANSITION LENGTH	
		STATION	OFFSET				LEFT	RIGHT
****4	WEST ST	0+79	27.0 RT	5.6'	7.0'	****	7.58'	15.00'**
****19	SOUTH ST (W)	0+41	8.9 LT	5.1'	5.0'	****	15.00'	6.50'
****20	SOUTH ST	0+33	40.9 RT	4.8'	5.0'	****	6.50'	15.00'
25	MAIN ST	24+98	20.2 RT	6.0'	5.0'	-1.33%	9.00'	3.25'**

****REFER TO WHEELCHAIR RAMP GRADING DIAGRAMS SHEETS 56-57.



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

SECTION A-A

WHEELCHAIR RAMP

N.T.S.

WCR #	ALIGNMENT	RAMP REFERENCE POINT		LENGTH OF PRIMARY RAMP (W)	WIDTH OF RAMP (MIN 5.00')	ROADWAY GUTTER	TRANSITION LENGTH	
		STATION	OFFSET				LEFT	RIGHT
7	MAIN STREET	16+36	17.00' LT	10.40'	5.00'	-0.59%	8.95'	7.58'
8	MAIN STREET	17+24	23.6' LT	8.50'	5.00'	1.68%	7.58'	9.00'***
****12	MAIN STREET	19+04	33.5' RT	7.68'	5.00'	****	8.10'	4.40'
13	MAIN STREET	19+07	20.7' LT	9.00'	5.00'	0.54%	9.12'	8.16'
14	MAIN STREET	20+84	28.7' RT	8.33'	5.00'	-0.25%	10.82'	7.58'
15	MAIN STREET	20+84	17.6' LT	8.33'	5.00'	0.25%	7.58'	8.76'***
16	BANK STREET	0+33	3.60' LT	8.33'	5.00'	1.91%	5.68'****	9.00'**
****18	SOUTH STREET (W)	0+39	10.4' RT	12.40'	5.00'	****	8.70'	15.00'

** = TRANSITION TO 6 INCH REVEAL
*** = TRANSITION TO 5 INCH REVEAL
****REFER TO WHEELCHAIR RAMP GRADING DIAGRAMS SHEETS 56-57.

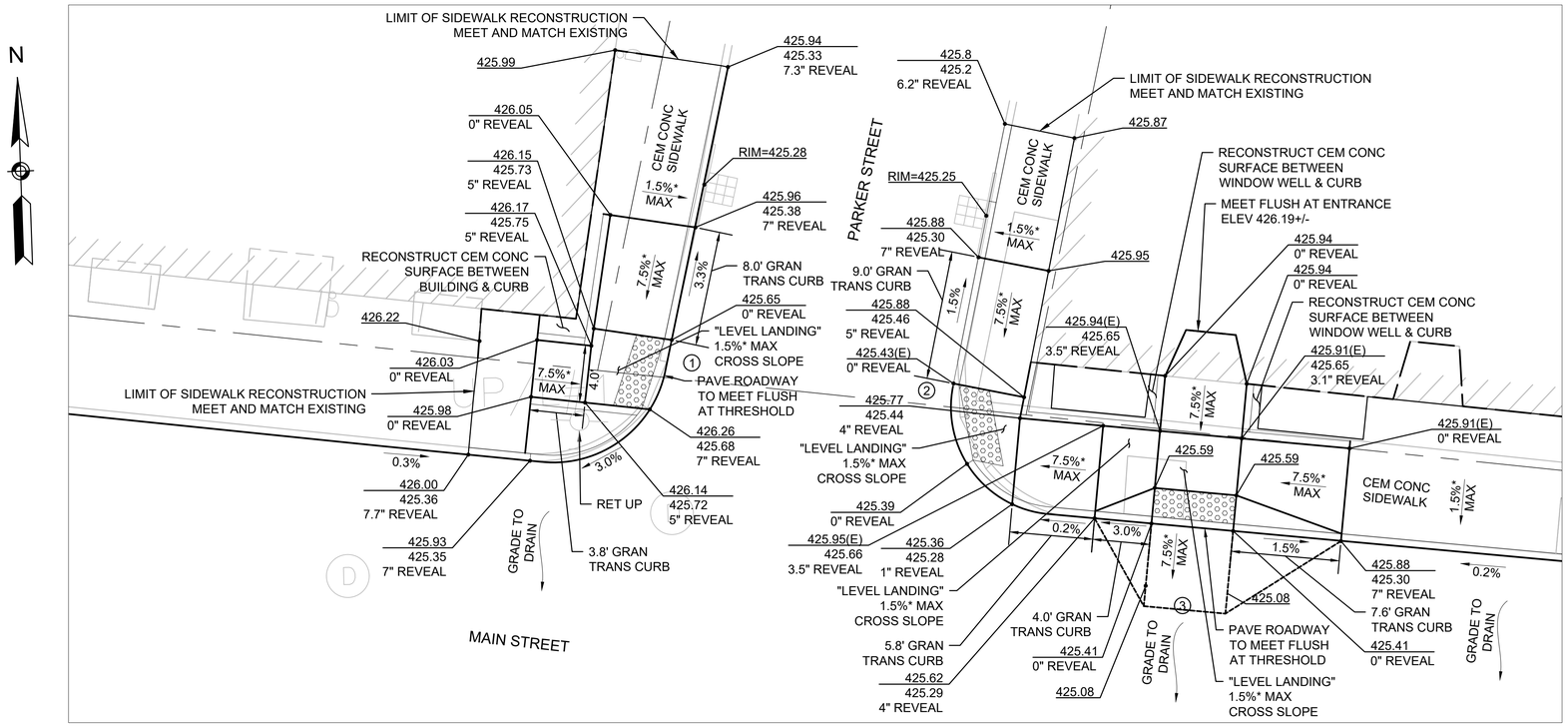
607987_HD(WCR).DWG Plotted on 11-Jul-2019 9:08 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	56	81
PROJECT FILE NO.	607987		

WHEELCHAIR RAMP DETAILS-3

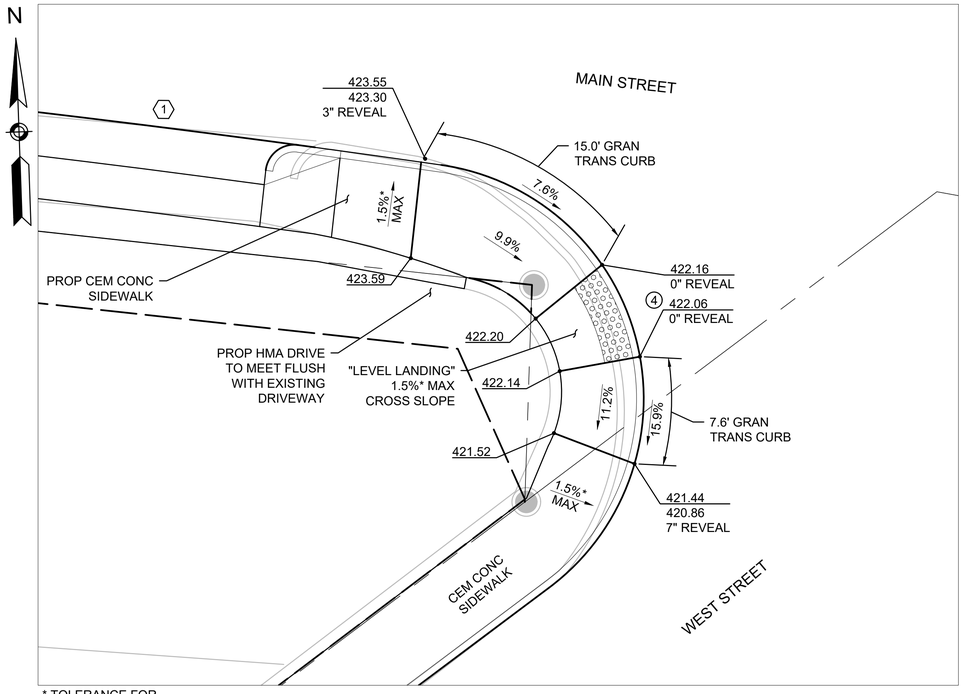
607987_HD(WCR SPECIFIC).DWG Plotted on 11-Jul-2019 9:08 AM



* TOLERANCE FOR CONSTRUCTION ±0.5%

GRADING DIAGRAM
WHEELCHAIR RAMPS #1, #2, & #3

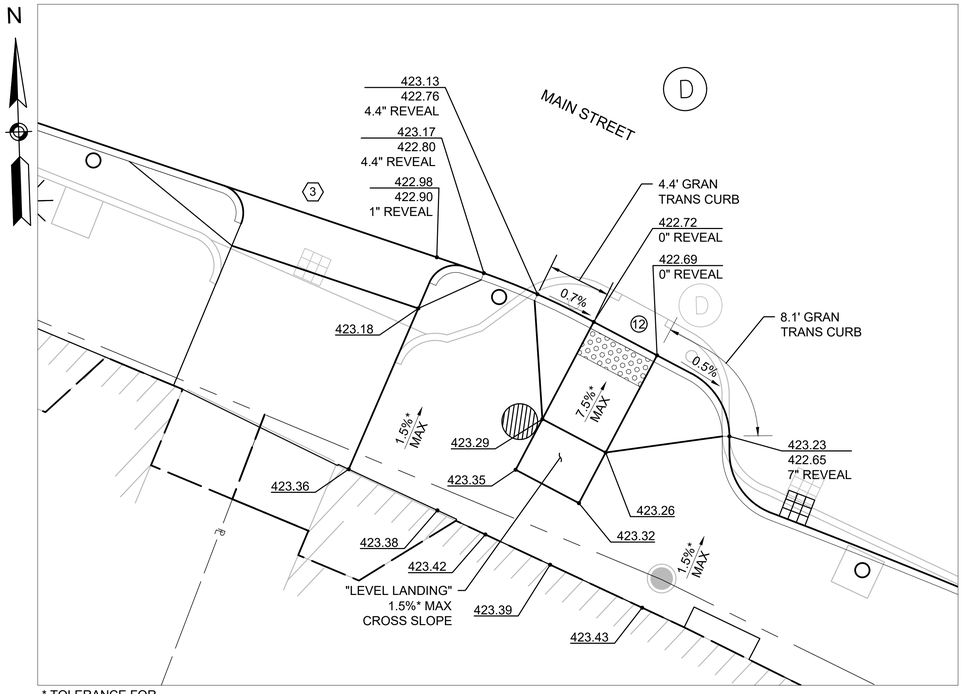
SCALE 1" = 5'



* TOLERANCE FOR CONSTRUCTION ±0.5%

GRADING DIAGRAM
WHEELCHAIR RAMP #4

SCALE 1" = 5'



* TOLERANCE FOR CONSTRUCTION ±0.5%

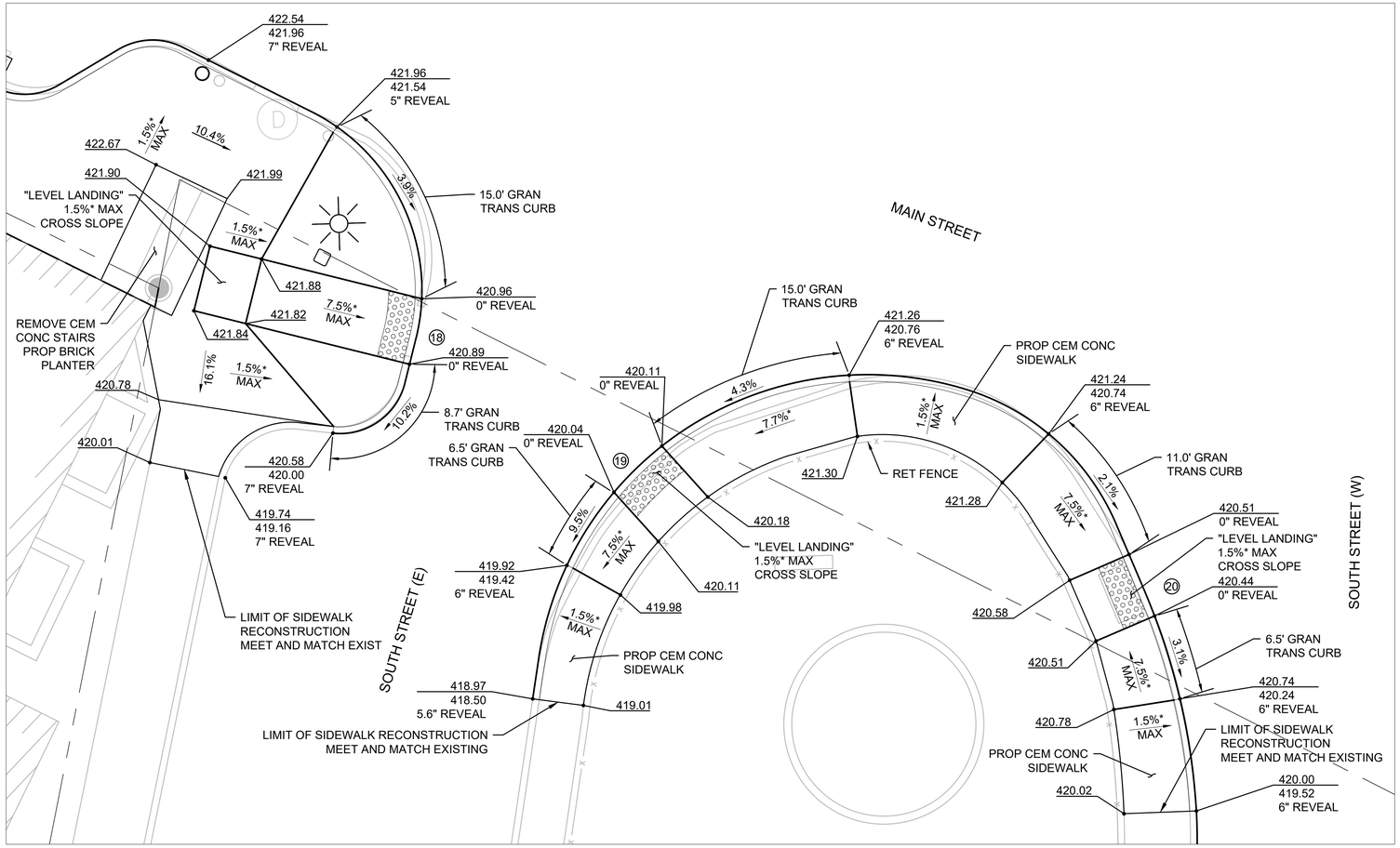
GRADING DIAGRAM
WHEELCHAIR RAMP #12

SCALE 1" = 5'

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	57	81
PROJECT FILE NO.	607987		

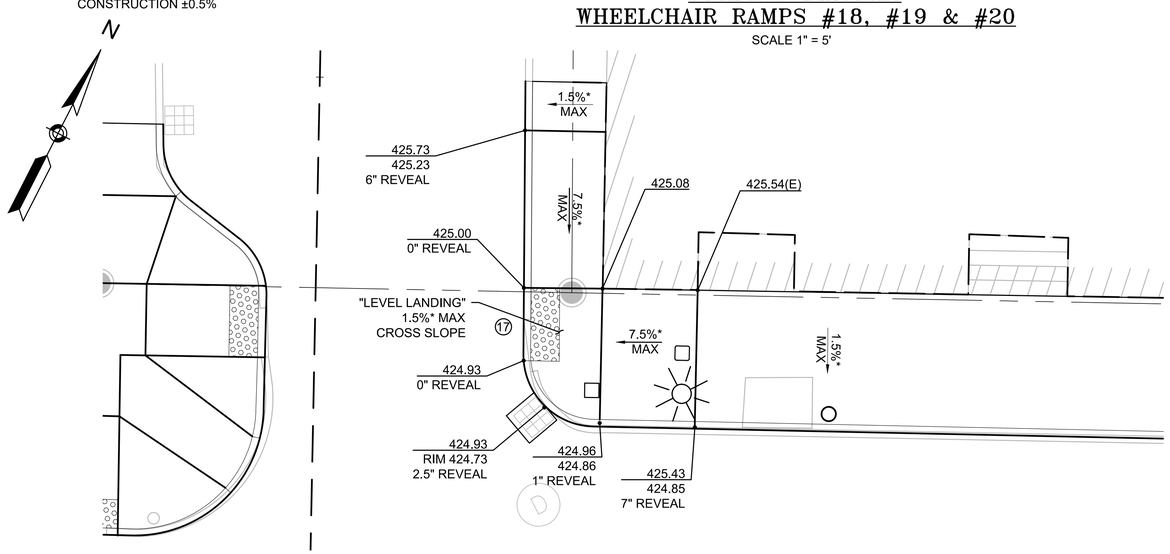
WHEELCHAIR RAMP DETAILS-4



* TOLERANCE FOR CONSTRUCTION ±0.5%

GRADING DIAGRAM
WHEELCHAIR RAMPS #18, #19 & #20

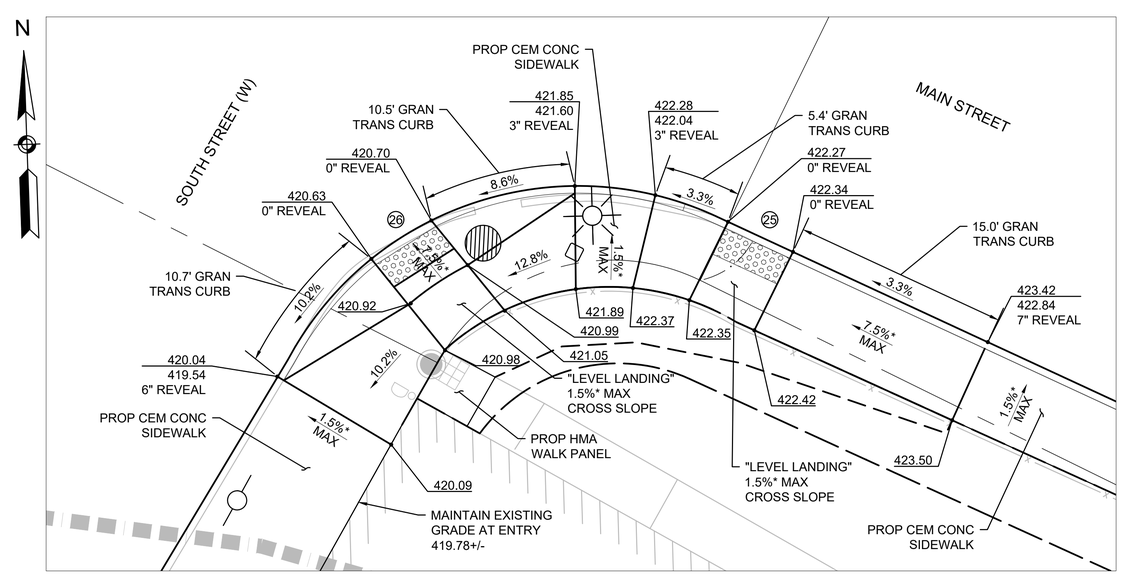
SCALE 1" = 5'



* TOLERANCE FOR CONSTRUCTION ±0.5%

GRADING DIAGRAM
WHEELCHAIR RAMP #17

SCALE 1" = 5'



* TOLERANCE FOR CONSTRUCTION ±0.5%

GRADING DIAGRAM
WHEELCHAIR RAMPS #25 & #26

SCALE 1" = 5'

607987_HD(WCR SPECIFIC).DWG Plotted on 11-Jul-2019 9:08 AM

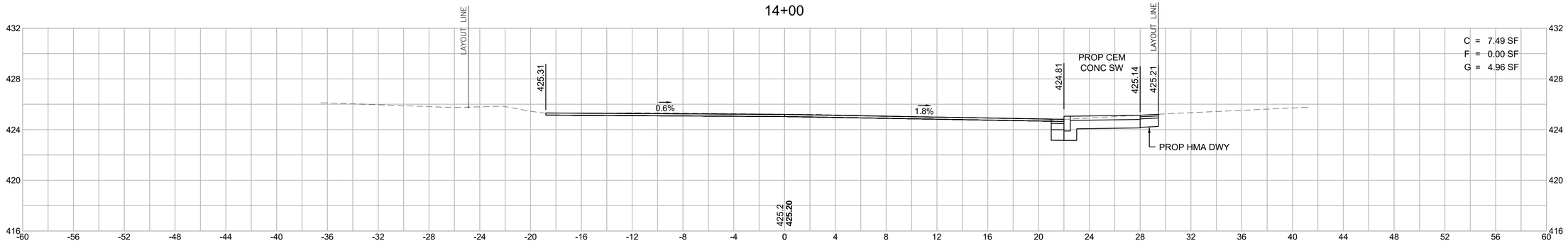
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	58	81
PROJECT FILE NO.	607987		

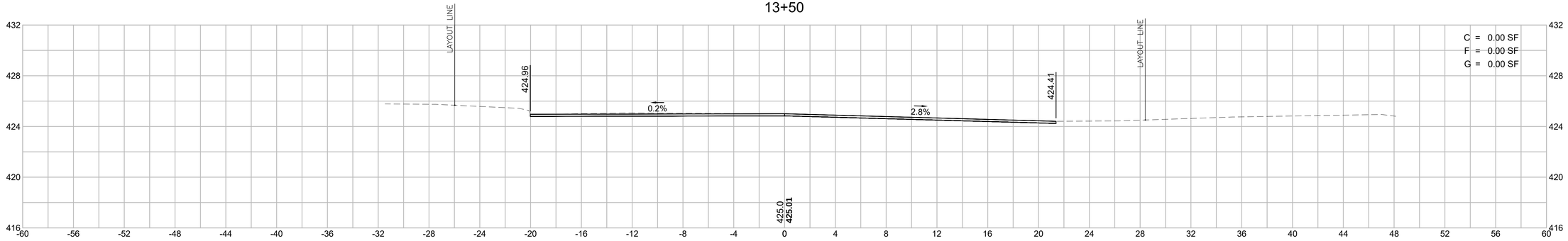
CROSS SECTIONS - 1
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:09 AM

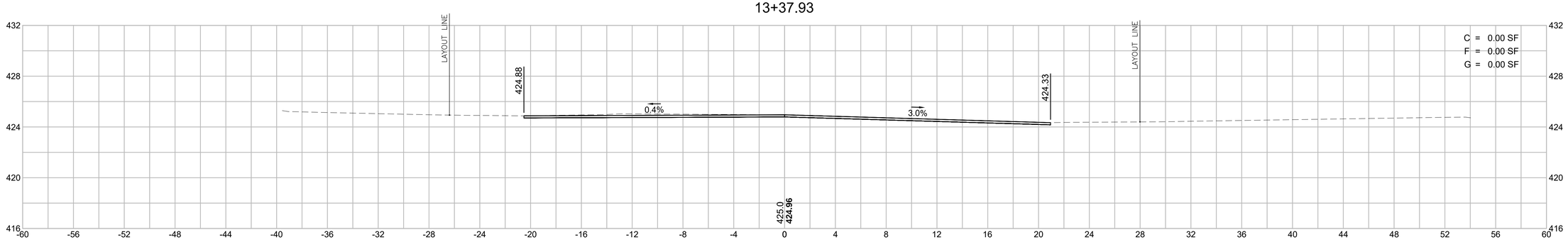
14+00



13+50



13+37.93

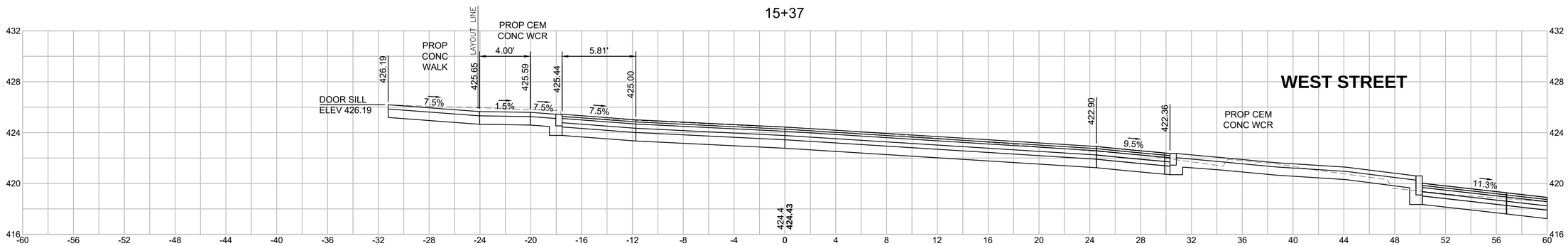


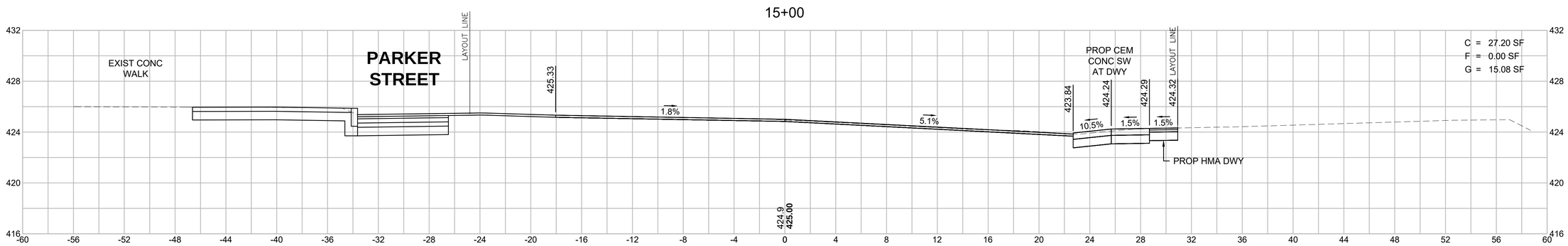
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

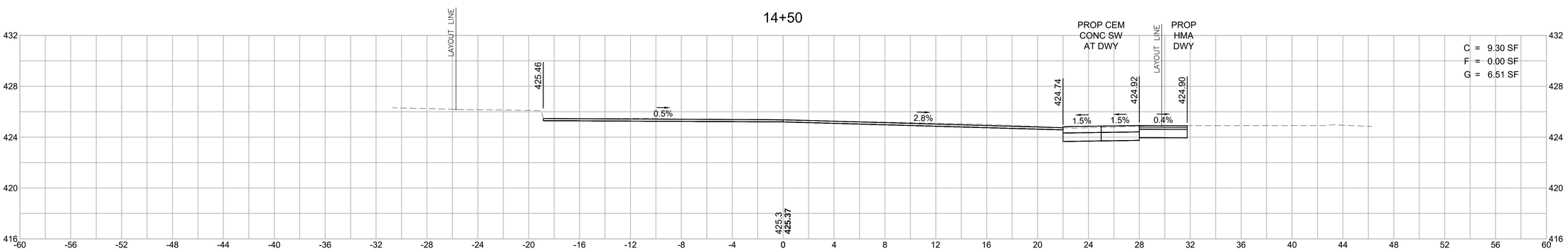
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	59	81
PROJECT FILE NO.	607987		

CROSS SECTIONS - 2
MAIN STREET







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

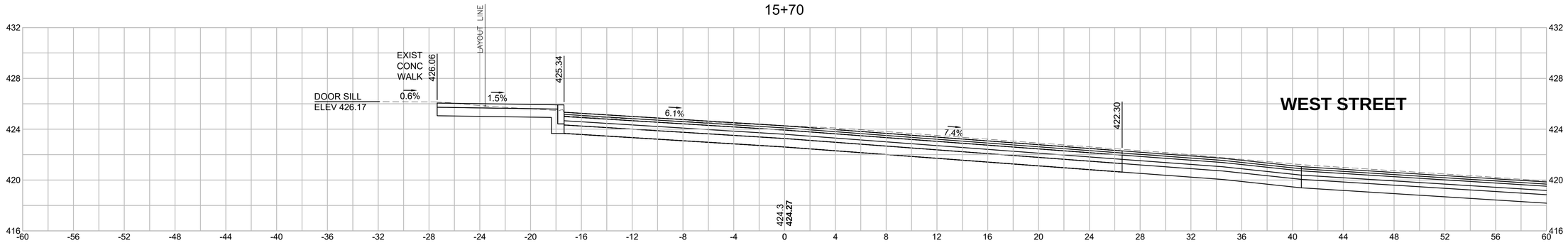
607987_HD(XS).DWG Plotted on 11-Jul-2019 9:09 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

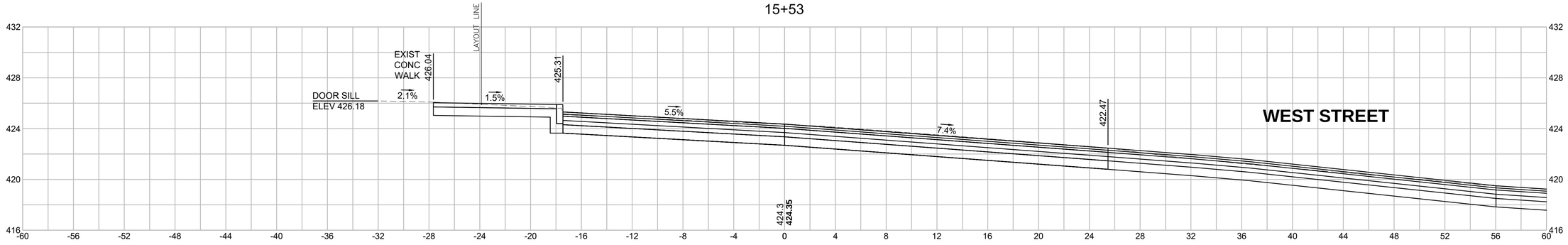
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	60	81
PROJECT FILE NO.	607987		

CROSS SECTIONS - 3
MAIN STREET

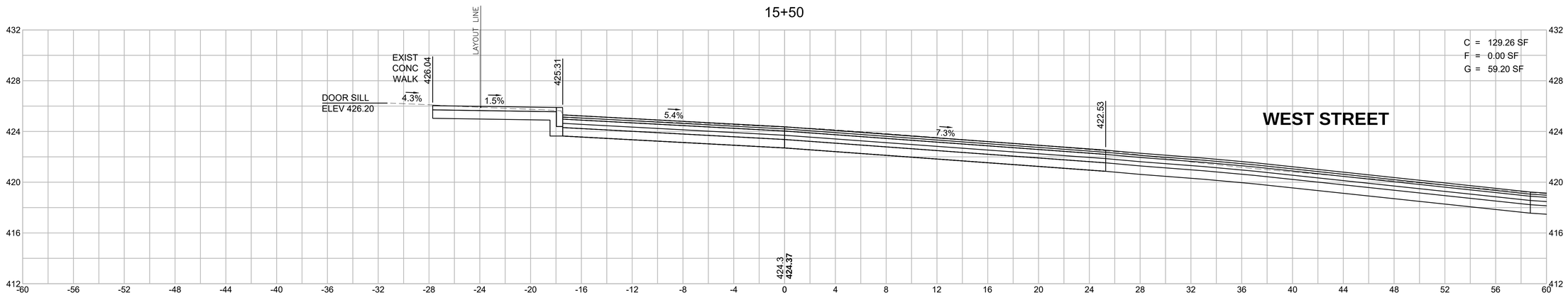
15+70



15+53



15+50



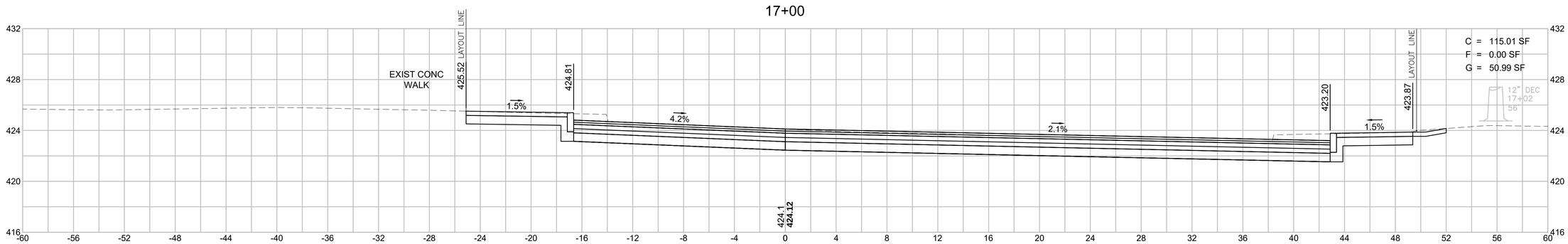
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

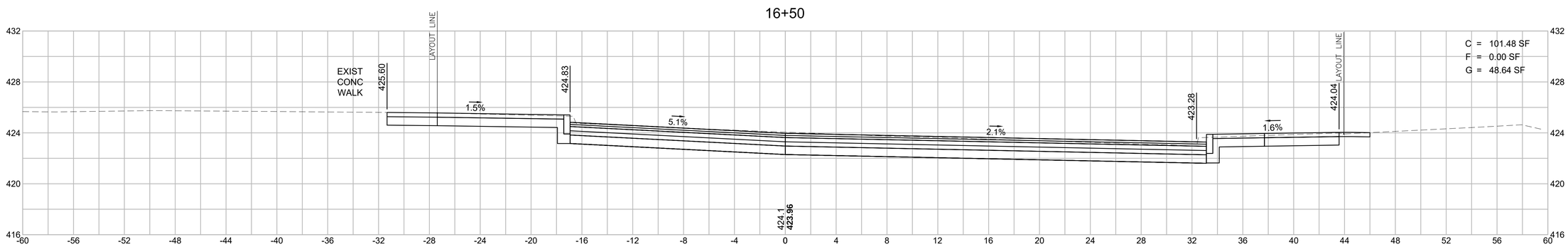
607987_HD(XS).DWG Plotted on 11-Jul-2019 9:09 AM

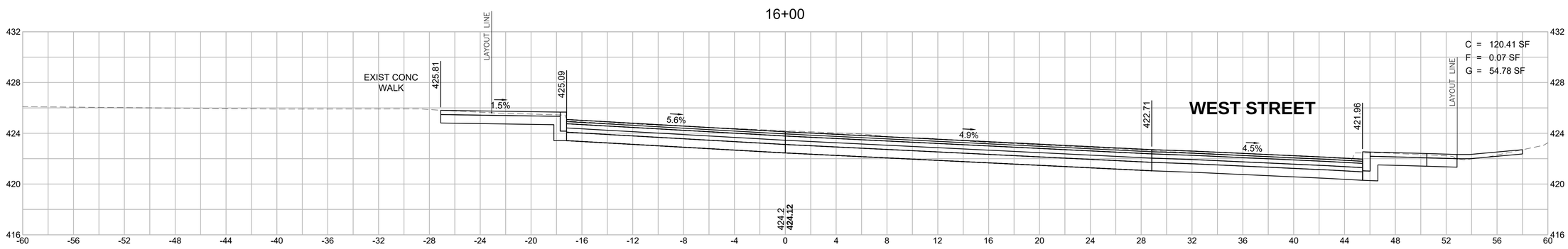
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	61	81
PROJECT FILE NO.	607987		

CROSS SECTIONS - 4
MAIN STREET







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

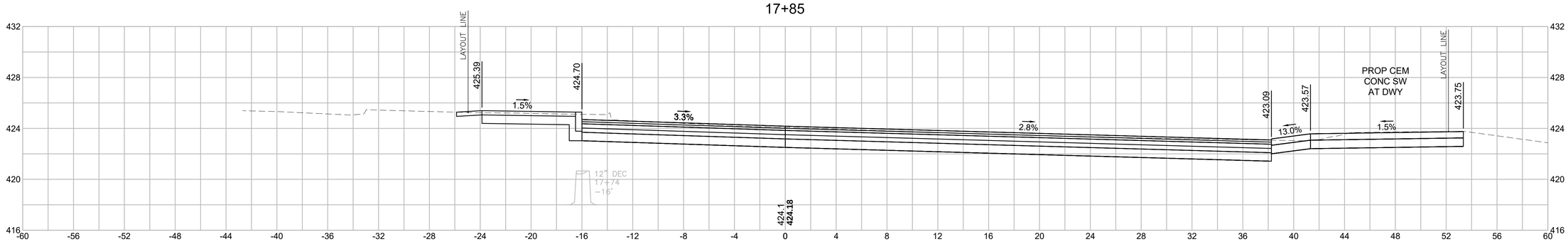
607987_HD(XS).DWG Plotted on 11-Jul-2019 9:09 AM

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

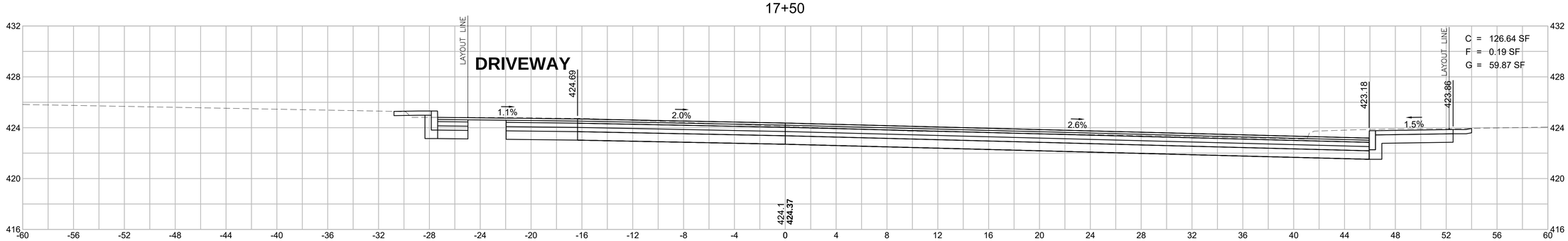
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	62	81
PROJECT FILE NO.	607987		

CROSS SECTIONS - 5
MAIN STREET

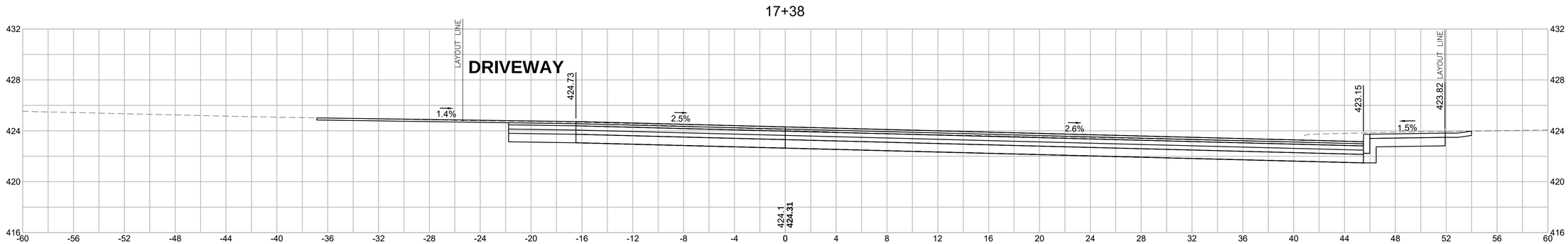
17+85



17+50



17+38



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

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:10 AM

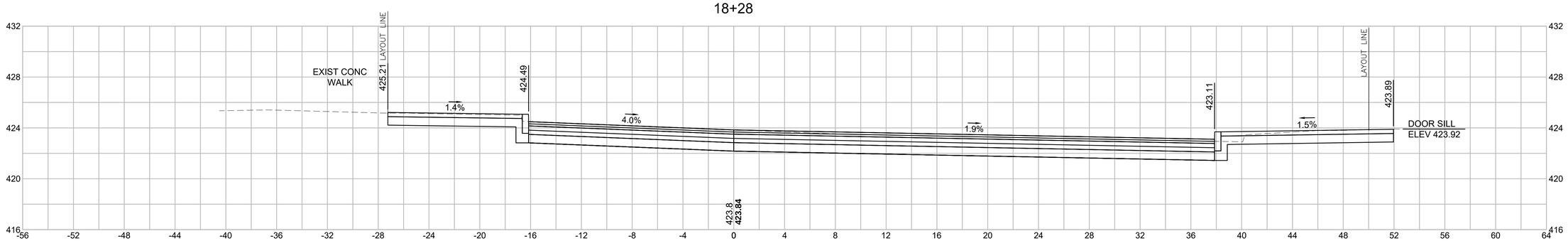
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	63	81
PROJECT FILE NO.	607987		

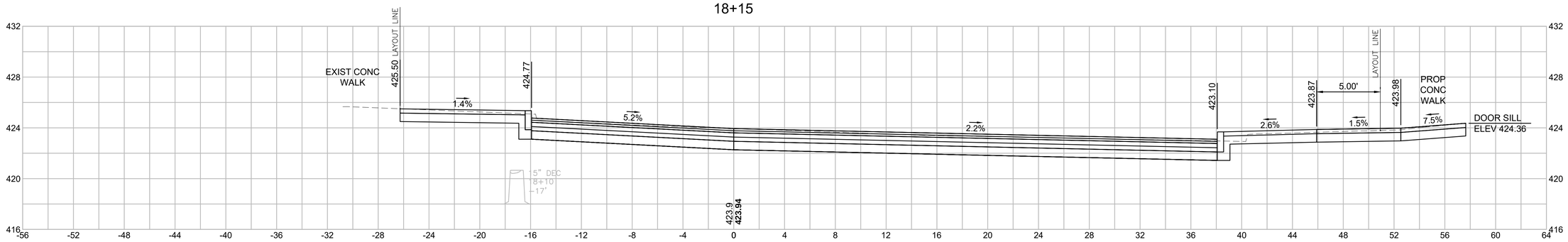
CROSS SECTIONS - 6
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:10 AM

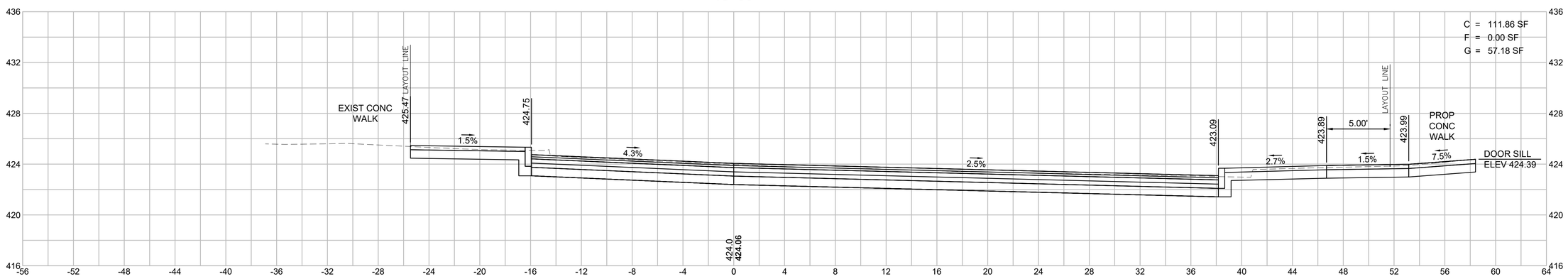
18+28



18+15



18+00



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

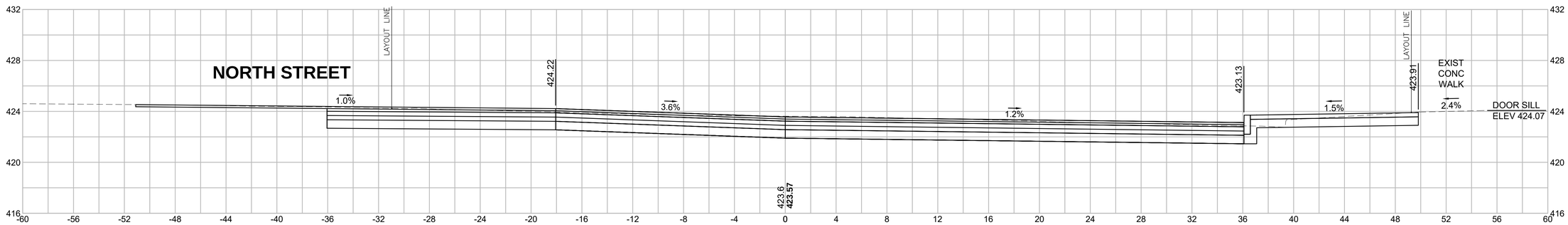
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	64	81
PROJECT FILE NO.	607987		

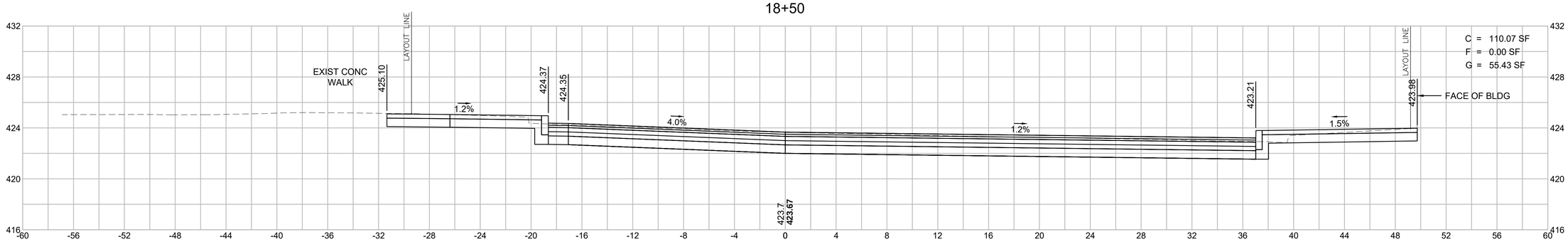
CROSS SECTIONS - 7
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:10 AM

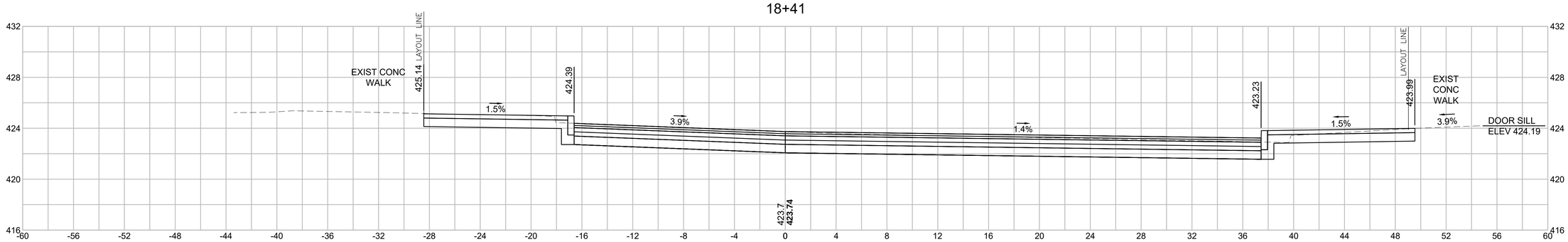
18+65



18+50



18+41



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

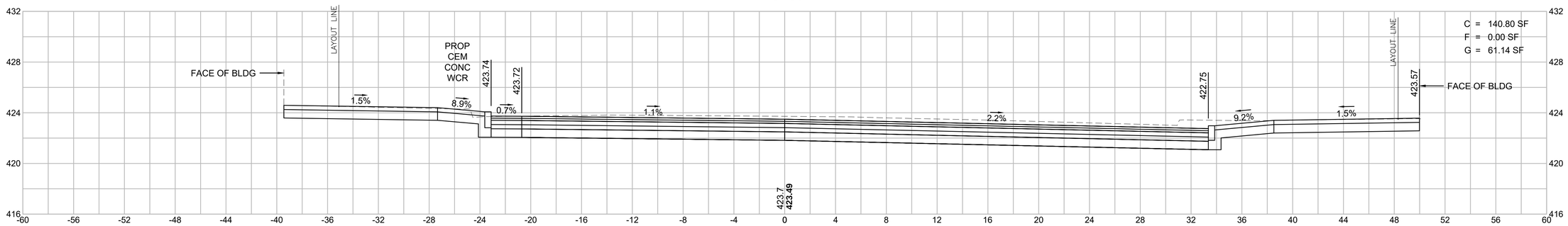
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	65	81
PROJECT FILE NO.	607987		

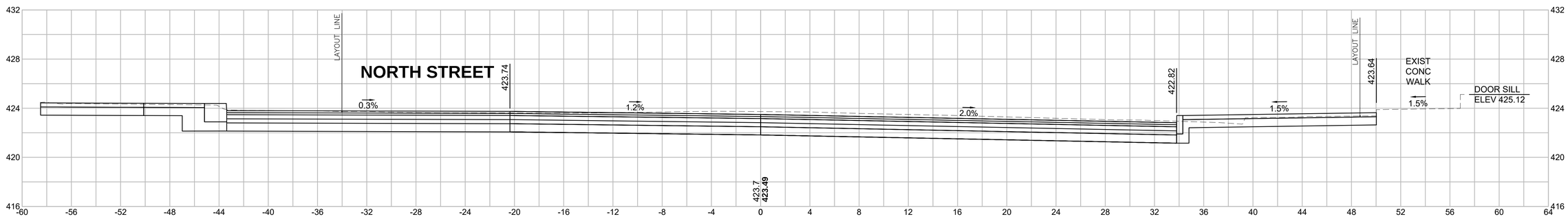
CROSS SECTIONS - 8
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:10 AM

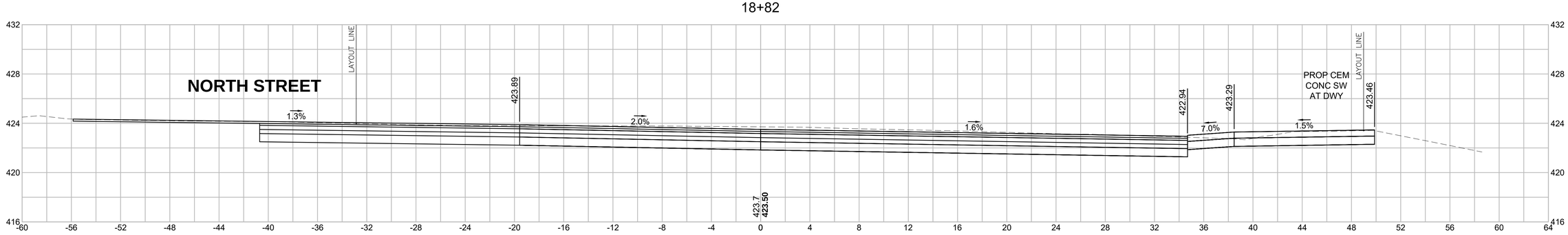
19+00



18+91



18+82



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

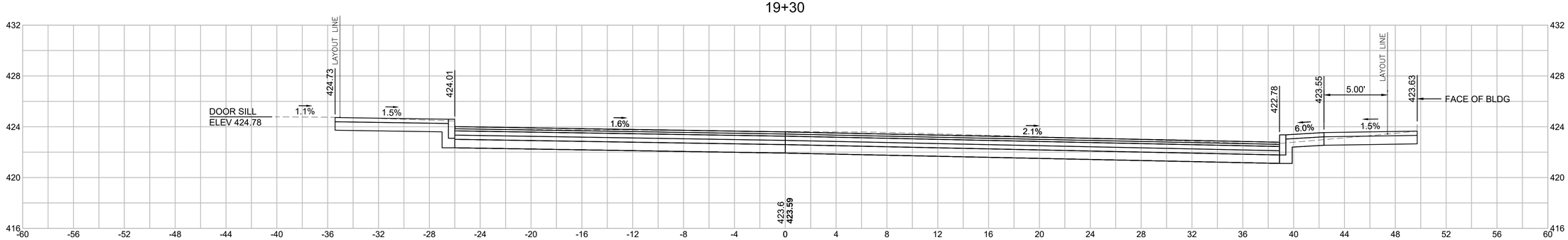
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	66	81
PROJECT FILE NO.	607987		

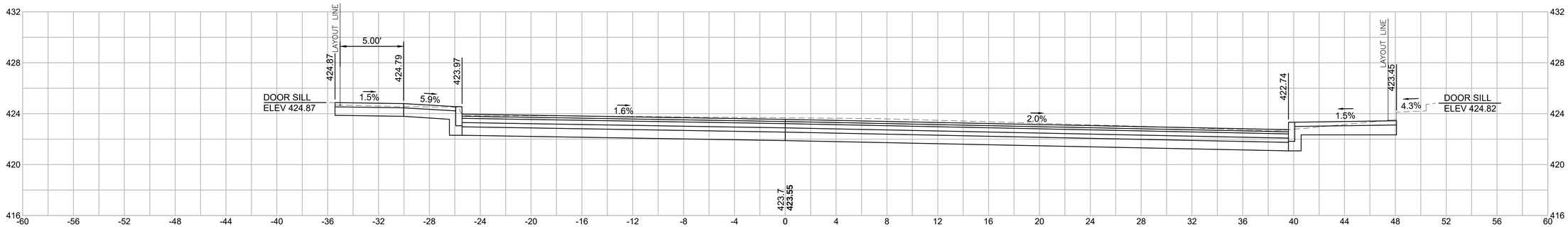
CROSS SECTIONS - 9
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:10 AM

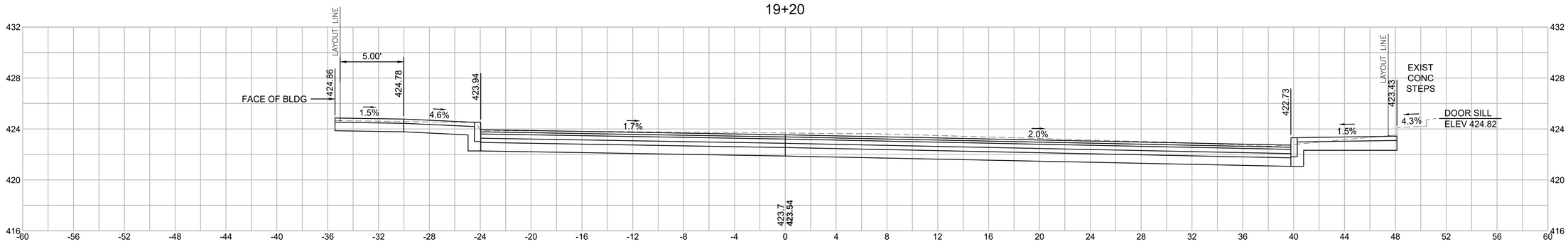
19+30



19+22



19+20



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

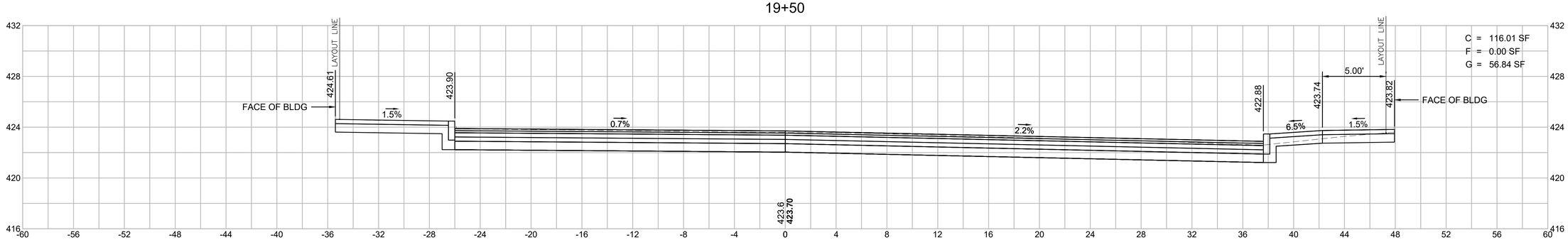
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	67	81
PROJECT FILE NO.	607987		

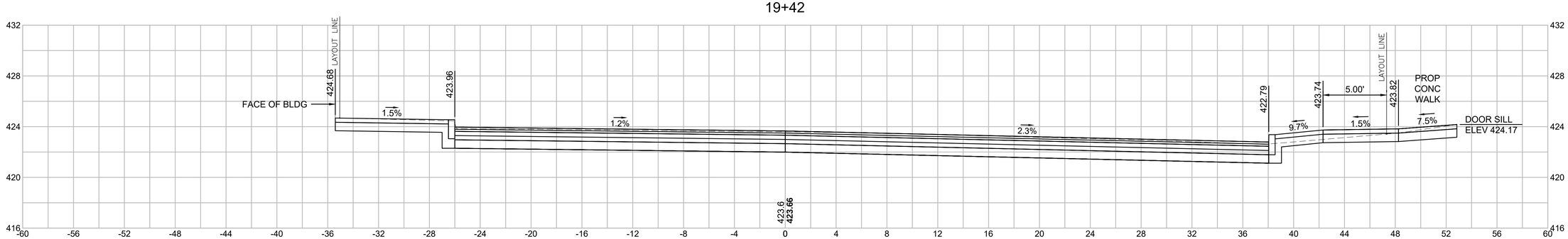
CROSS SECTIONS - 10
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:10 AM

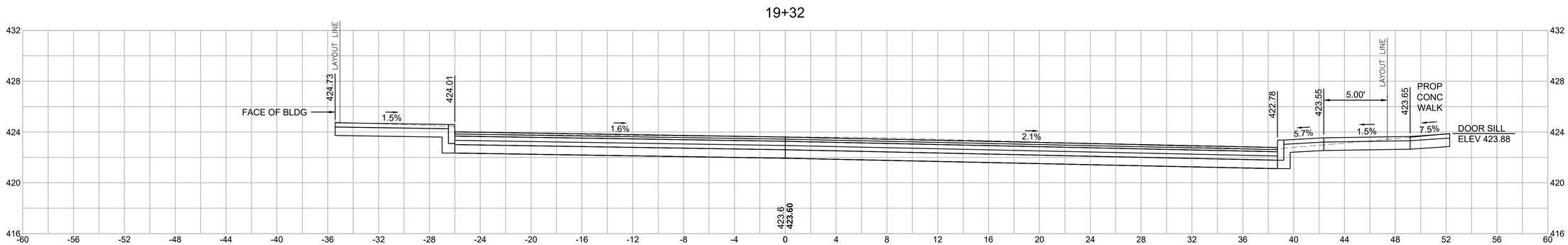
19+50



19+42



19+32



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

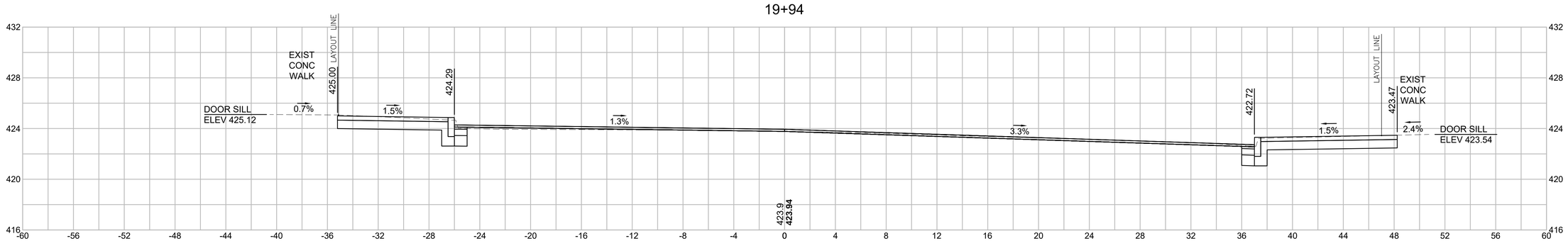
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	68	81
PROJECT FILE NO.	607987		

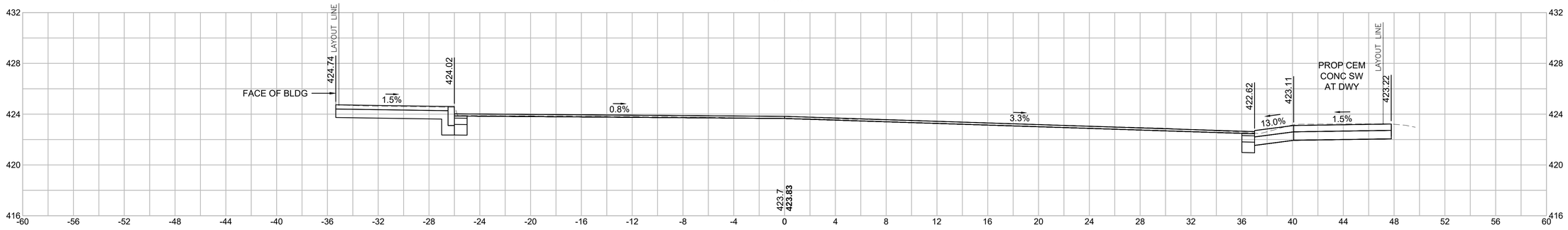
CROSS SECTIONS - 11
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:11 AM

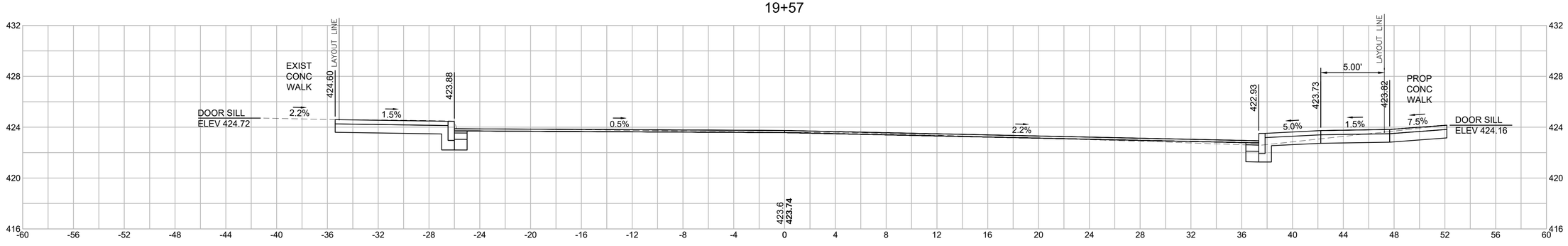
19+94



19+73



19+57



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

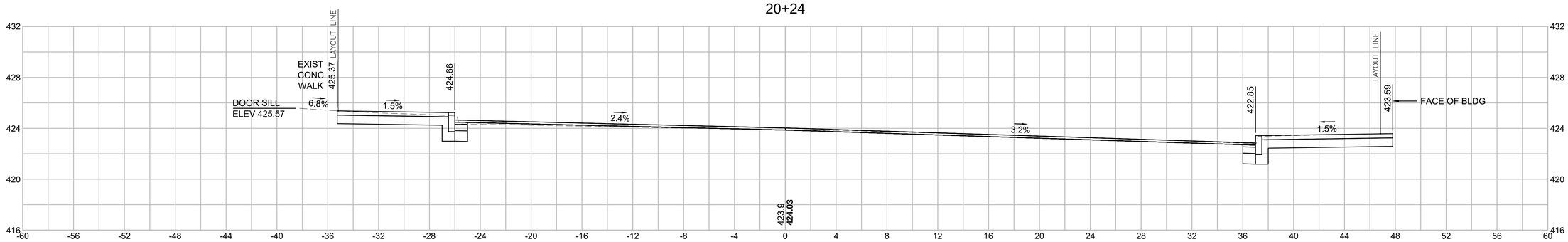
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	69	81
PROJECT FILE NO.	607987		

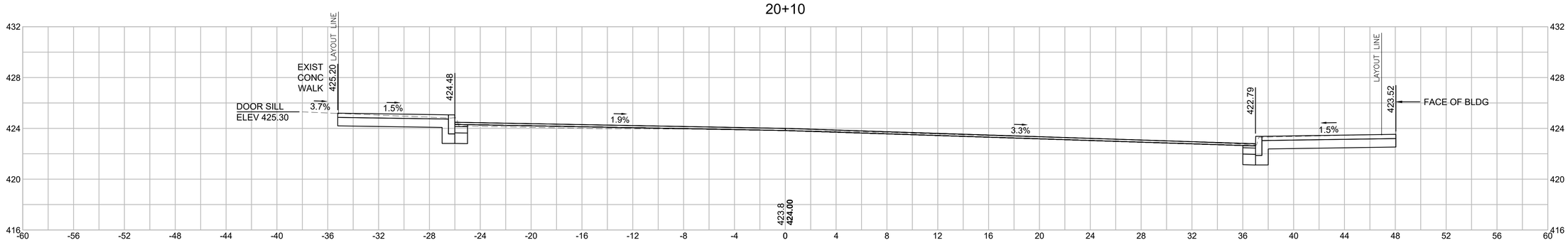
CROSS SECTIONS - 12
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:11 AM

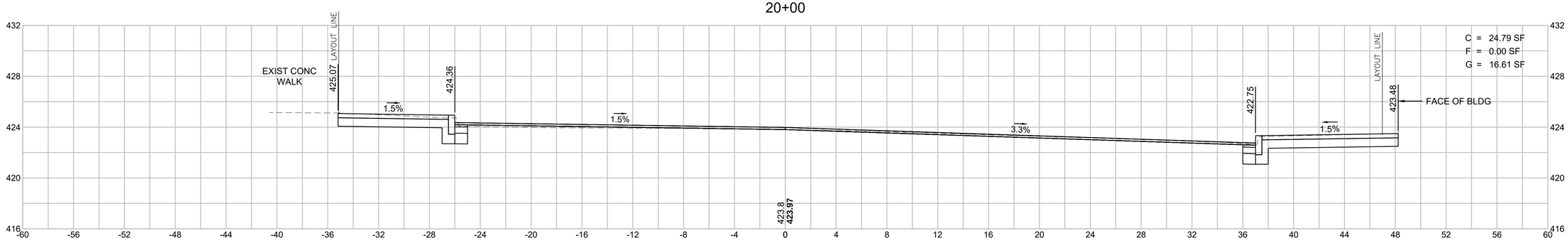
20+24



20+10



20+00



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

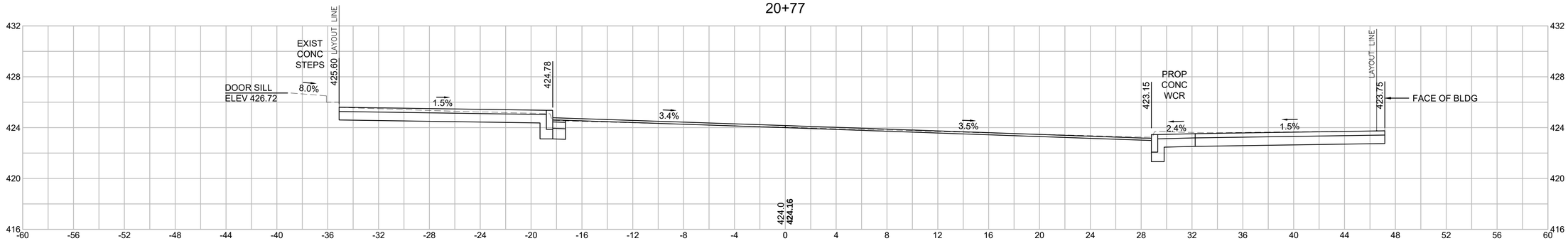
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	70	81
PROJECT FILE NO.	607987		

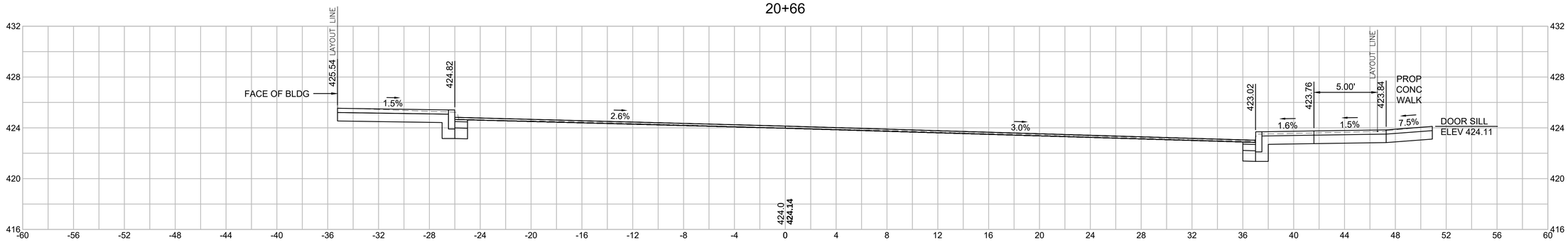
CROSS SECTIONS - 13
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:11 AM

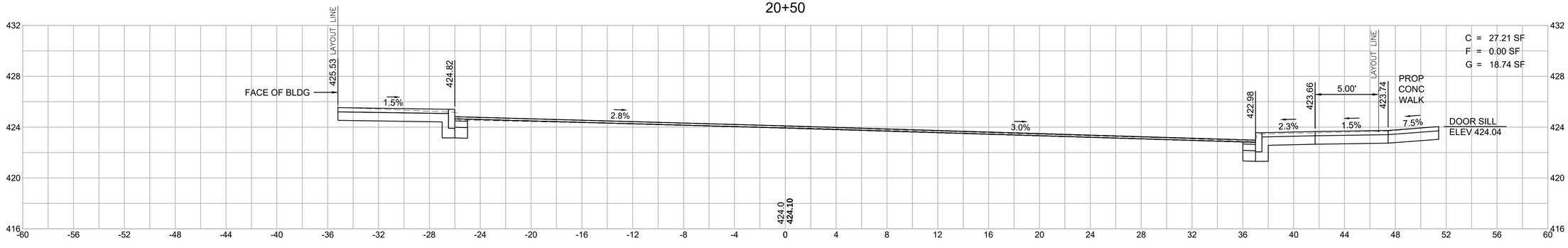
20+77



20+66



20+50



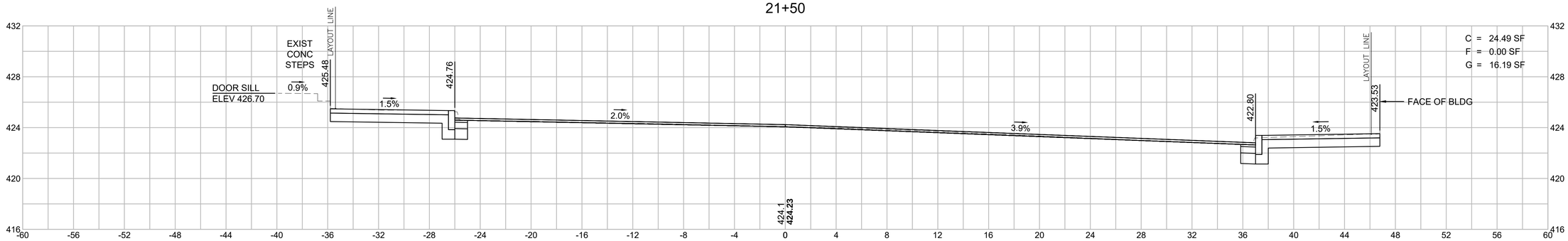
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

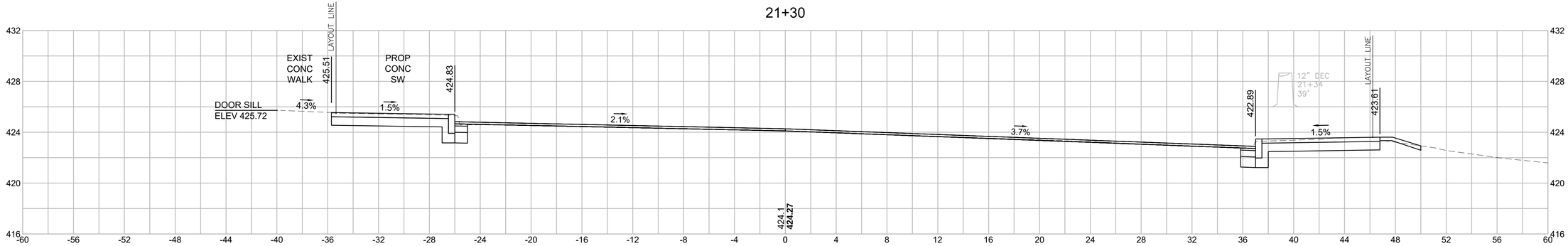
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	71	81
PROJECT FILE NO.	607987		

CROSS SECTIONS - 14
MAIN STREET

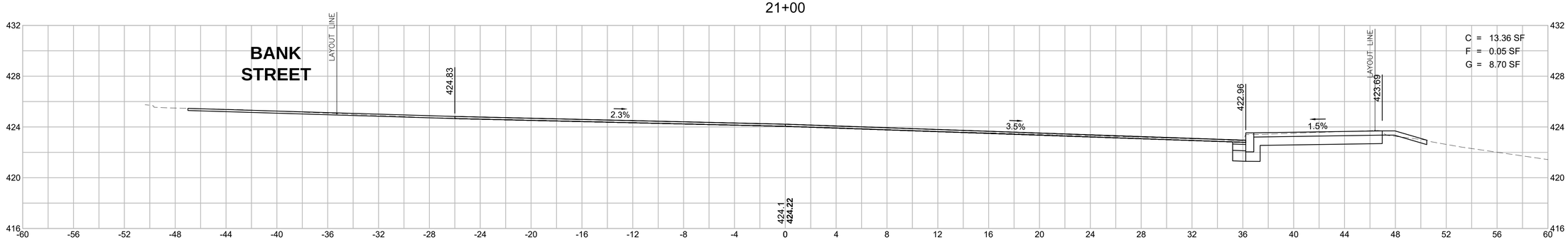
21+50



21+30



21+00



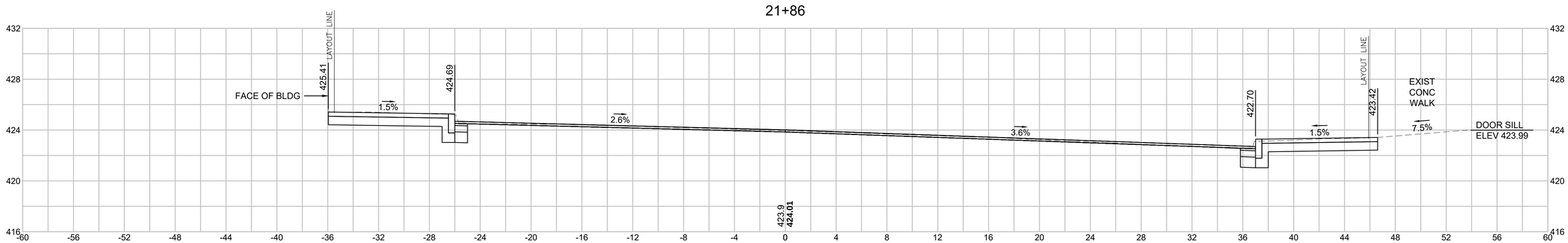
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

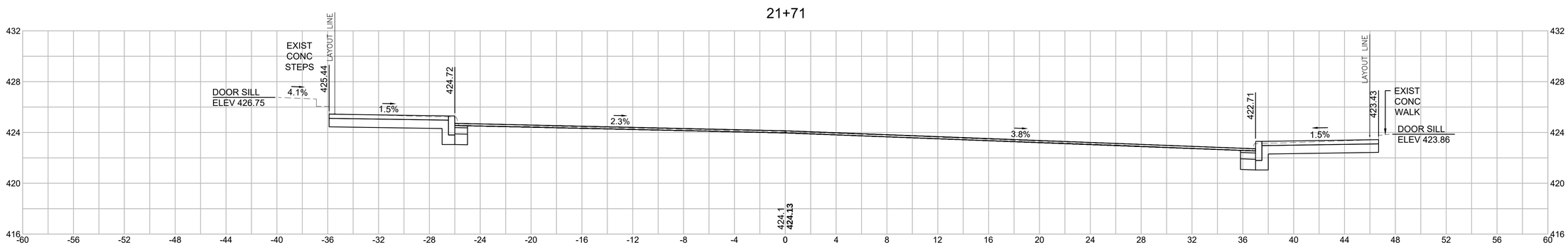
607987_HD(XS).DWG Plotted on 11-Jul-2019 9:11 AM

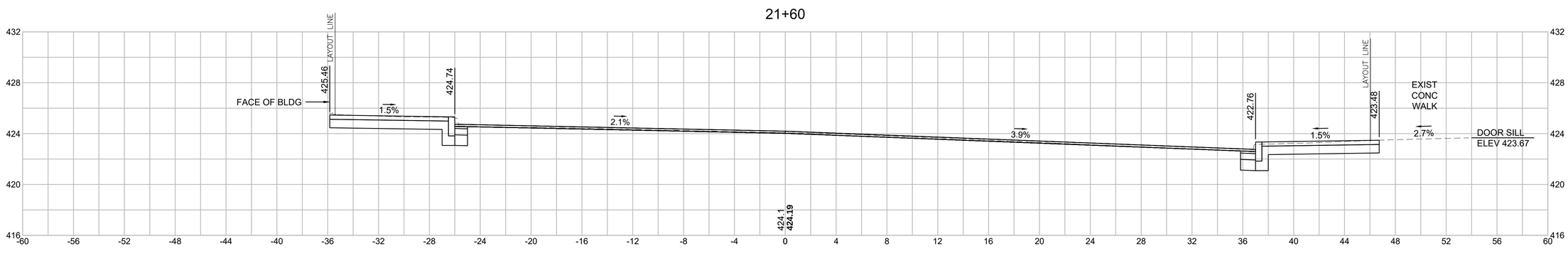
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	72	81
PROJECT FILE NO.	607987		

CROSS SECTIONS - 15
MAIN STREET







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

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:11 AM

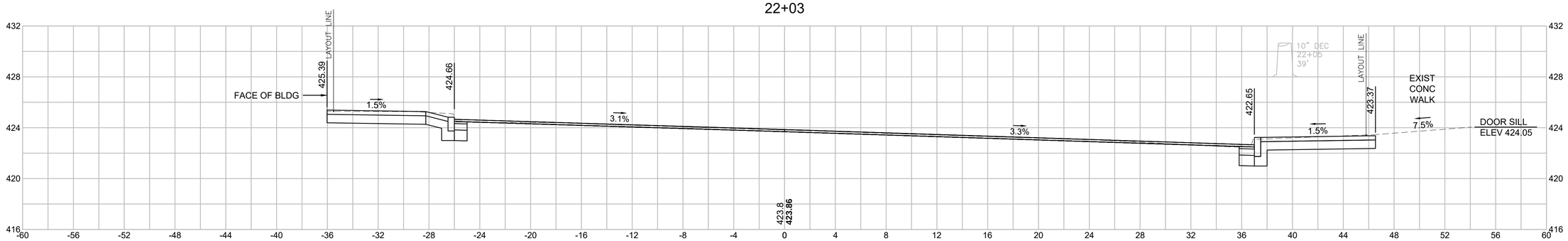
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	73	81
PROJECT FILE NO.	607987		

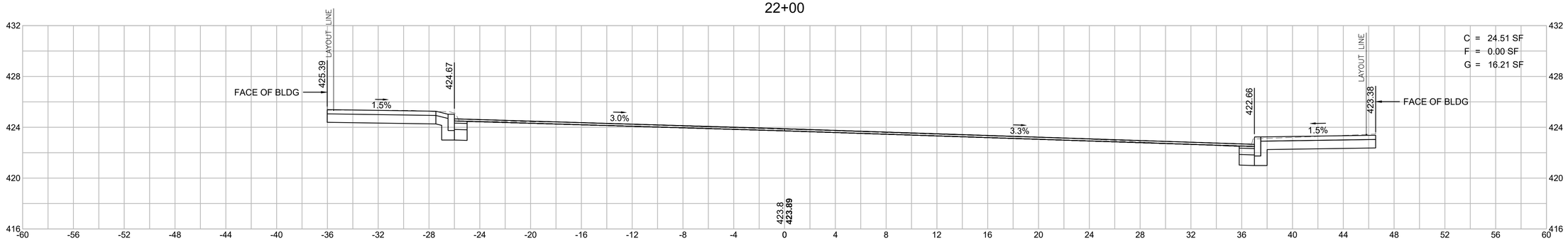
CROSS SECTIONS - 16
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:11 AM

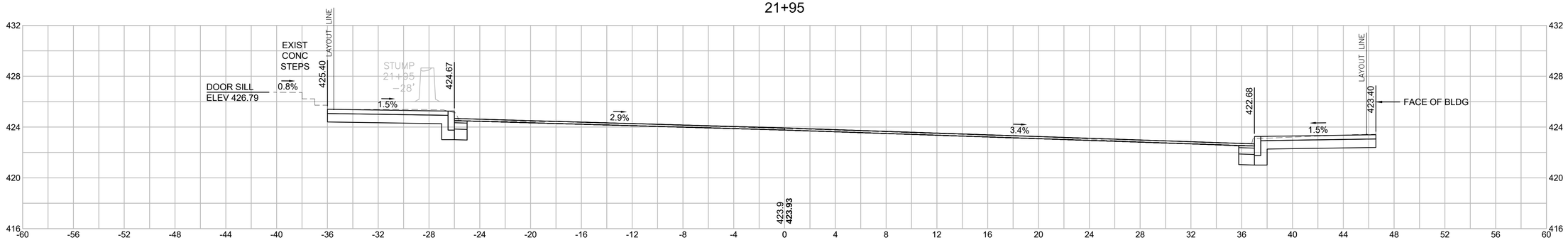
22+03



22+00



21+95



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

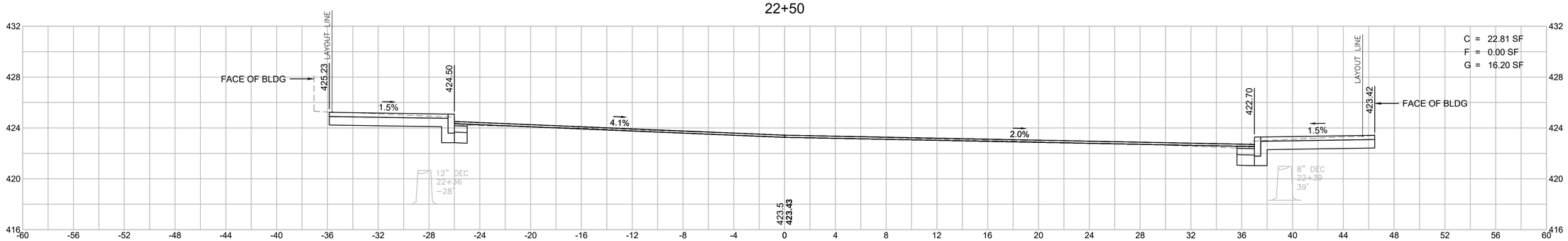
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	74	81
PROJECT FILE NO.	607987		

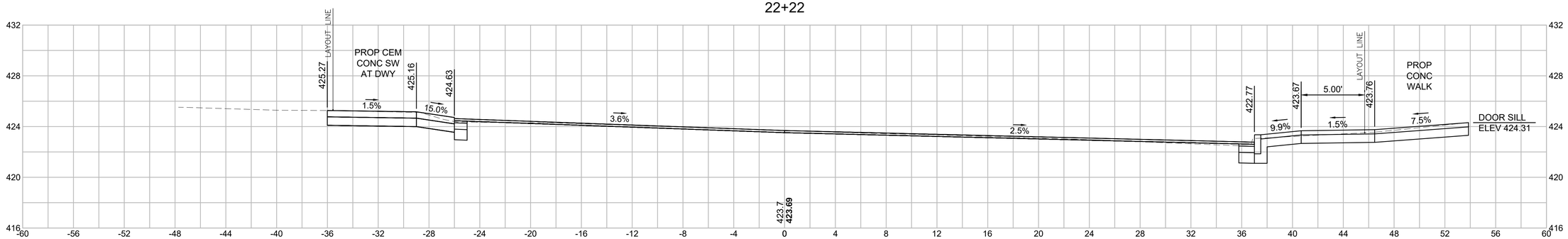
CROSS SECTIONS - 17
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:12 AM

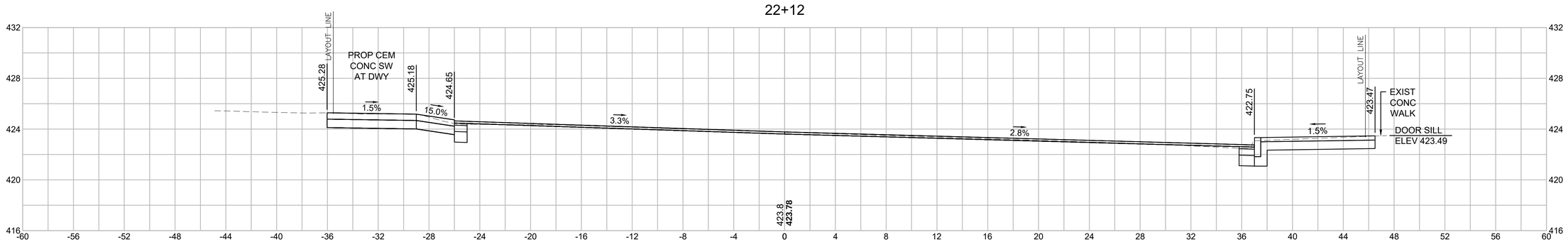
22+50



22+22



22+12



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

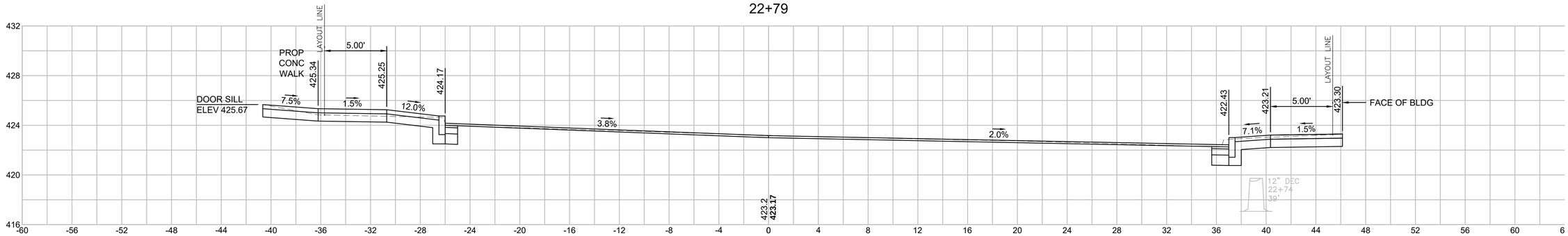
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	75	81
PROJECT FILE NO.	607987		

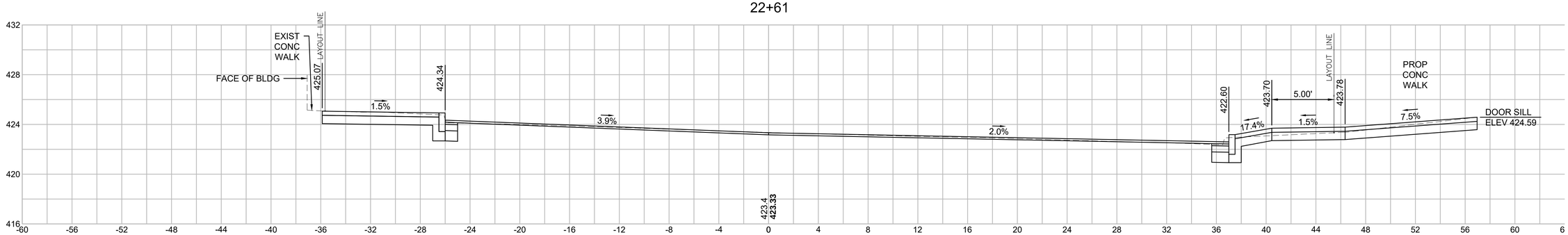
CROSS SECTIONS - 18
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:12 AM

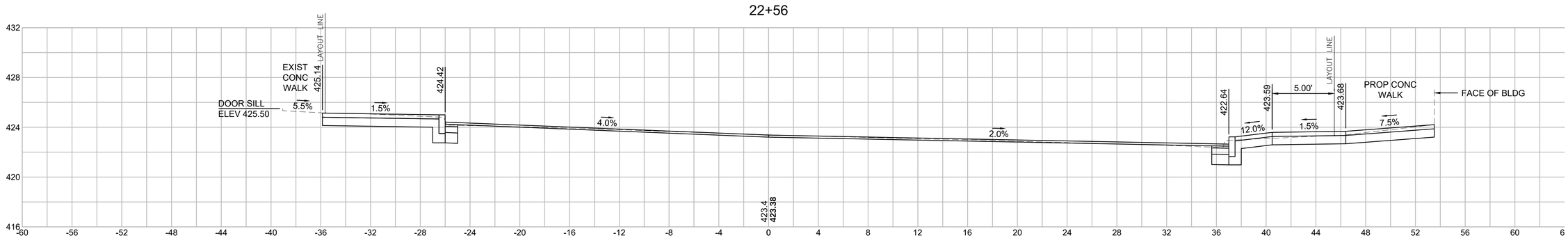
22+79



22+61



22+56



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

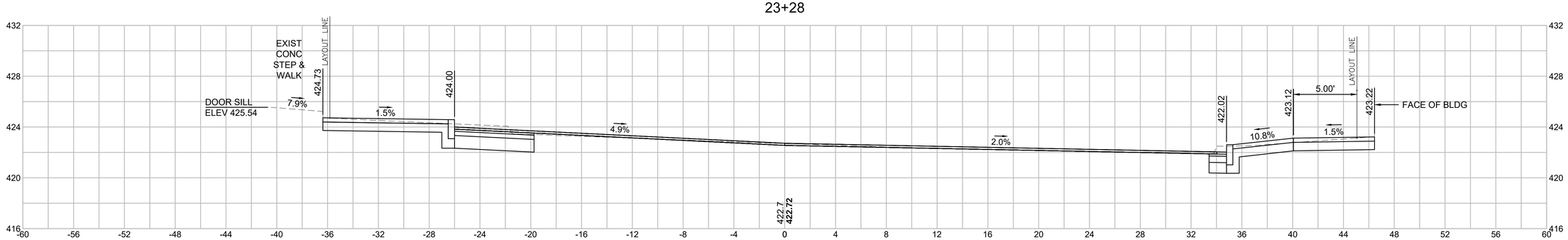
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	76	81
PROJECT FILE NO.	607987		

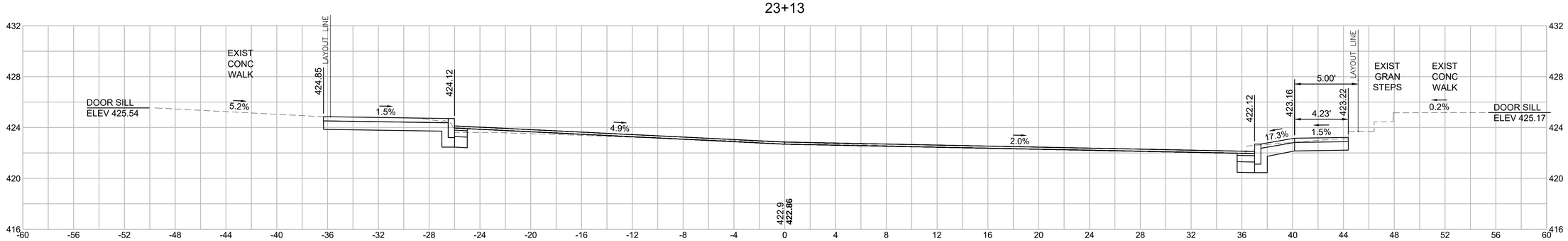
CROSS SECTIONS - 19
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:12 AM

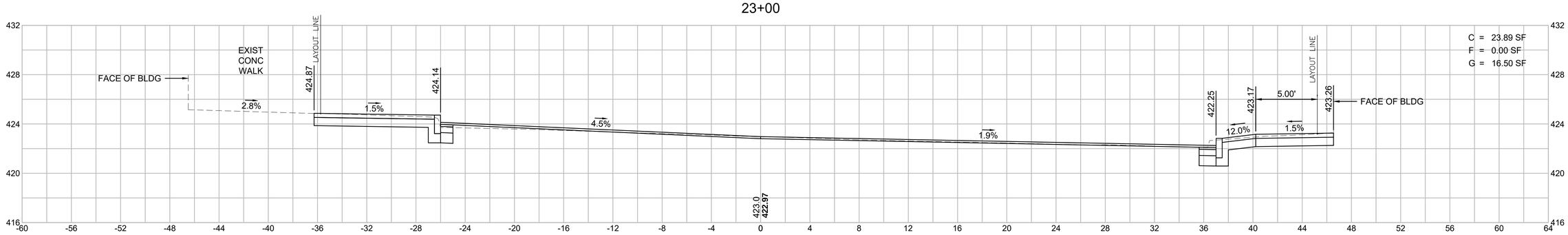
23+28



23+13



23+00



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

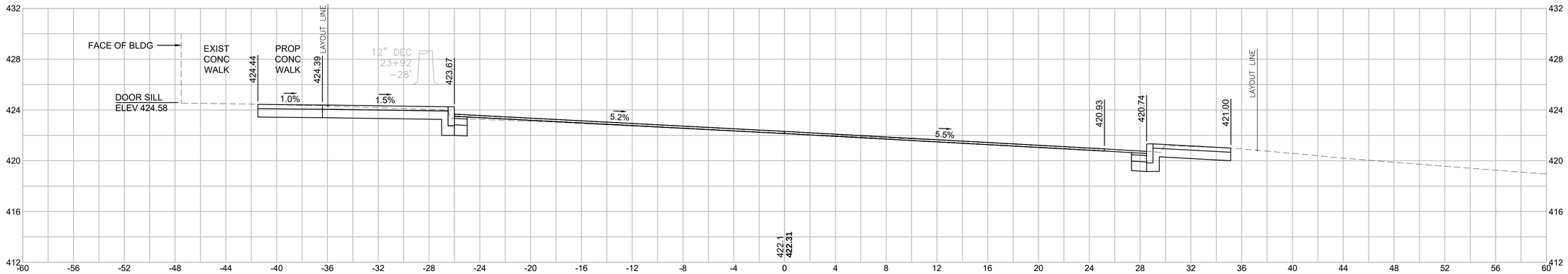
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	77	81
PROJECT FILE NO.	607987		

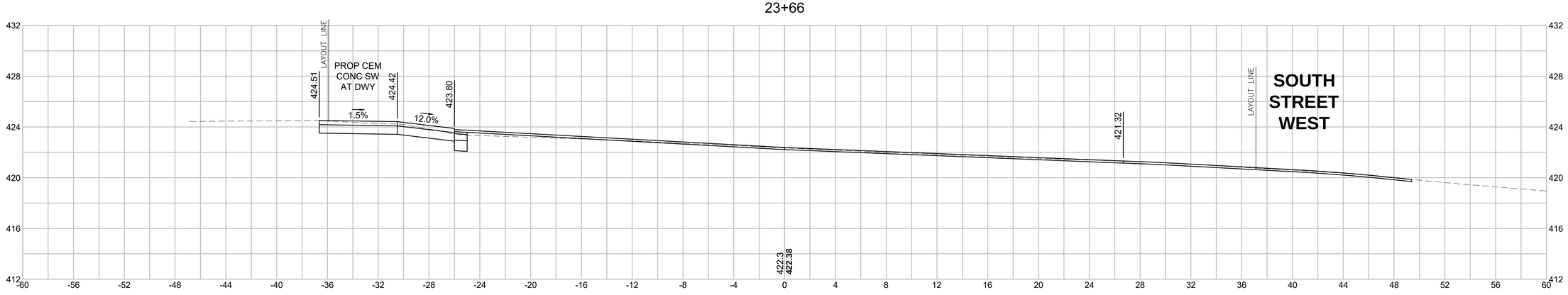
CROSS SECTIONS - 20
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:12 AM

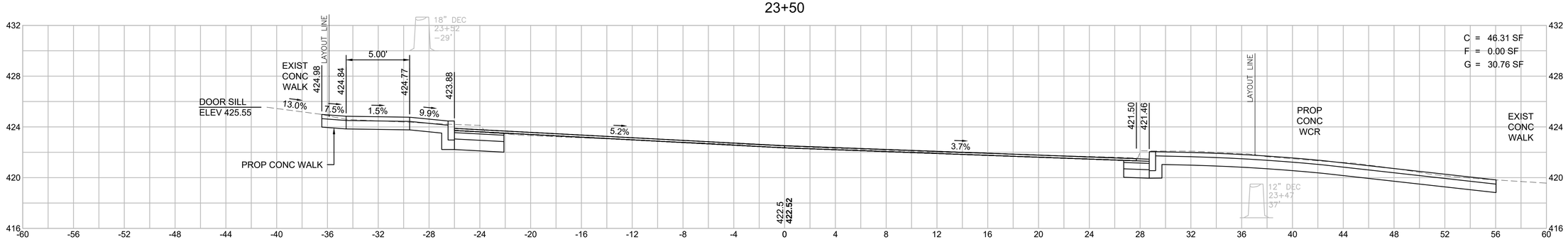
23+89



23+66



23+50



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

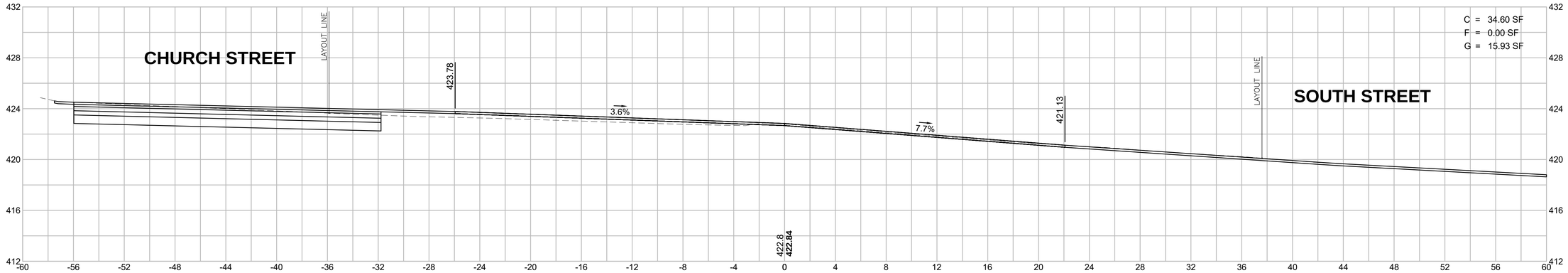
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	78	81
PROJECT FILE NO.	607987		

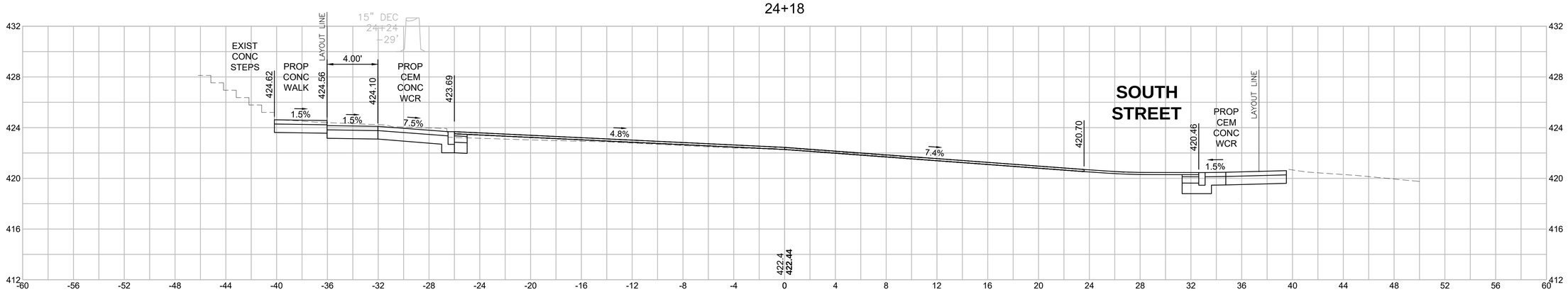
CROSS SECTIONS - 21
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:12 AM

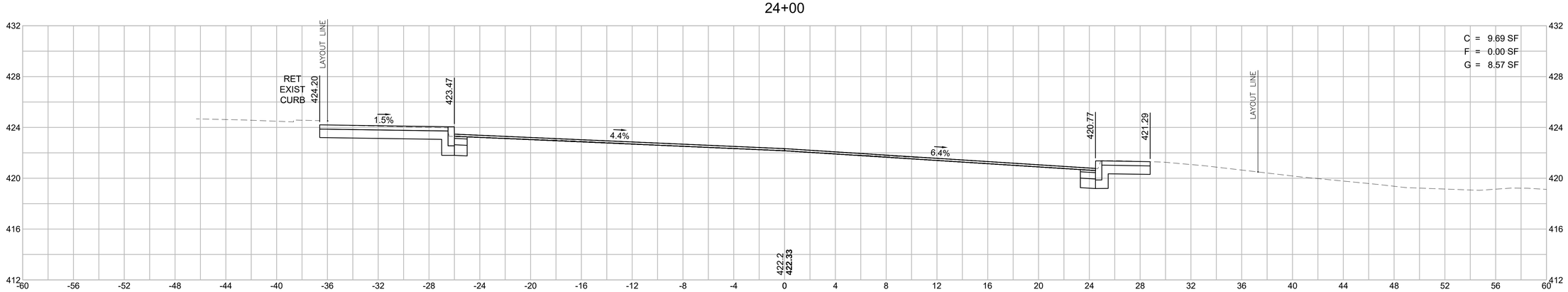
24+50



24+18



24+00



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

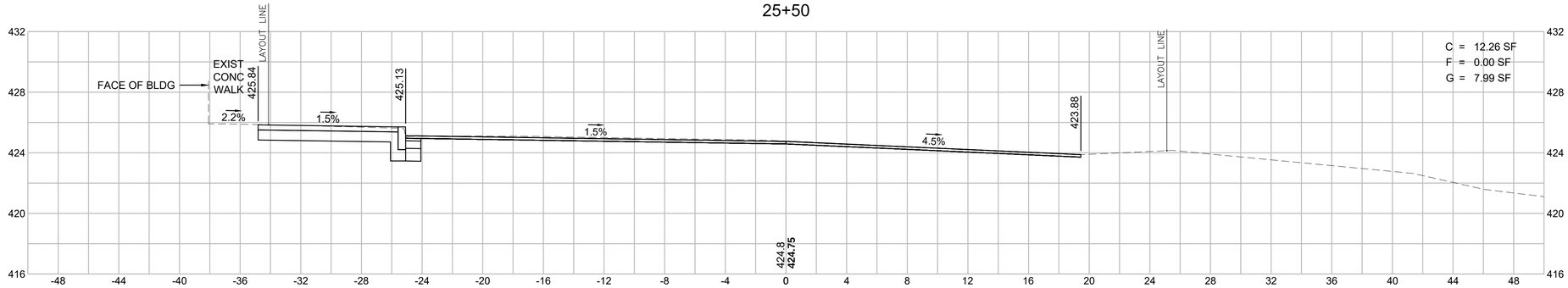
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	79	81
PROJECT FILE NO.	607987		

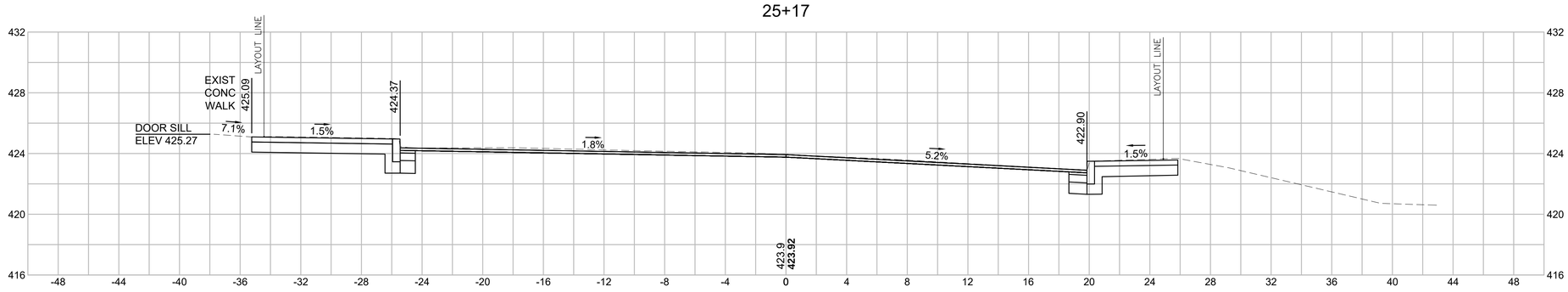
CROSS SECTIONS - 22
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:12 AM

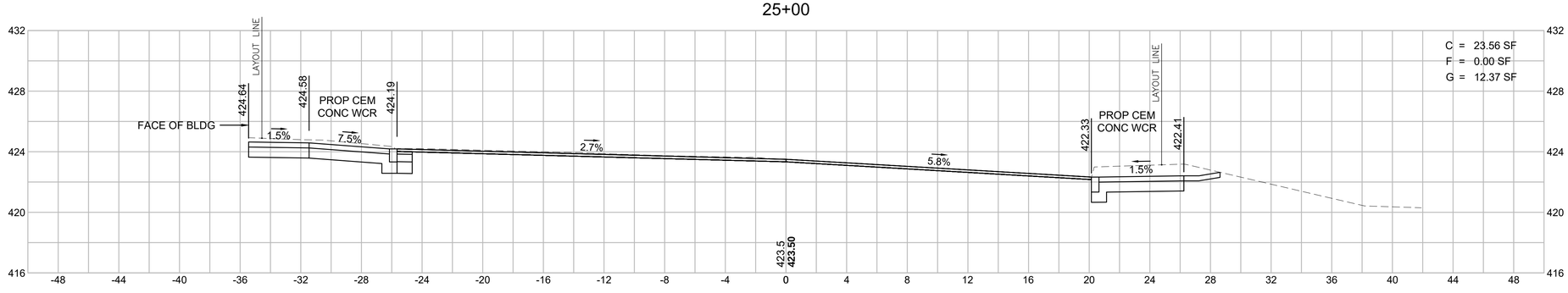
25+50



25+17



25+00



HOR. SCALE IN FEET
VER. SCALE IN FEET

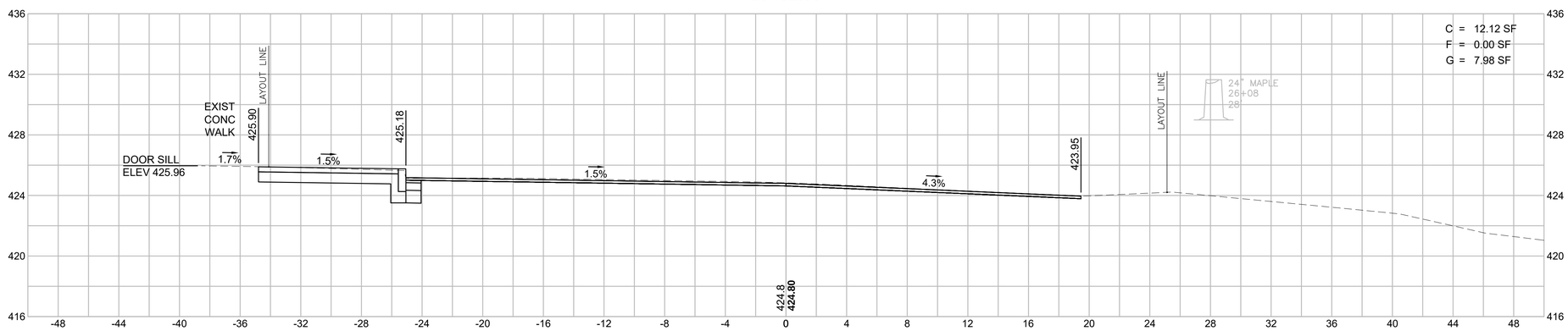
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	80	81
PROJECT FILE NO.	607987		

CROSS SECTIONS - 23
MAIN STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:13 AM

25+52.05



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

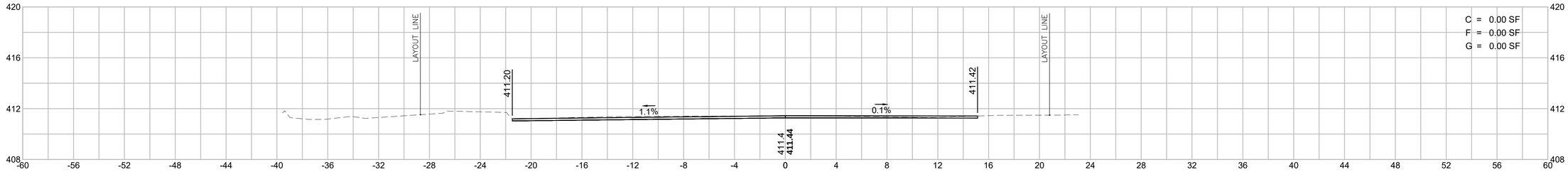
WARE
TOWN CENTER INTERSECTION IMPROVEMENTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP/STP-0032(017)X	81	81
PROJECT FILE NO.	607987		

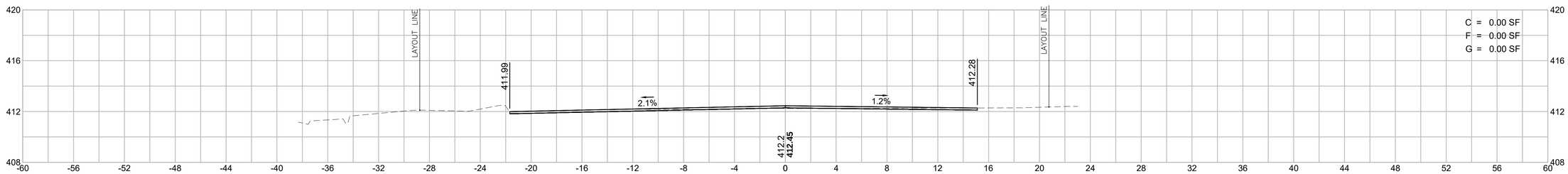
CROSS SECTIONS - 24
WEST STREET

607987_HD(XS).DWG Plotted on 11-Jul-2019 9:13 AM

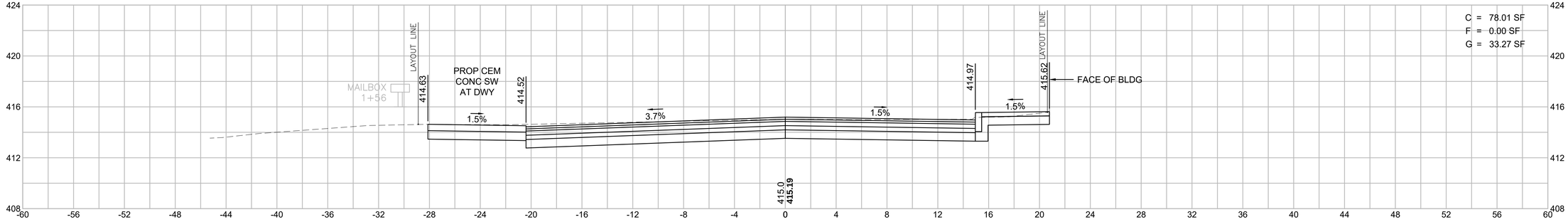
2+19.11



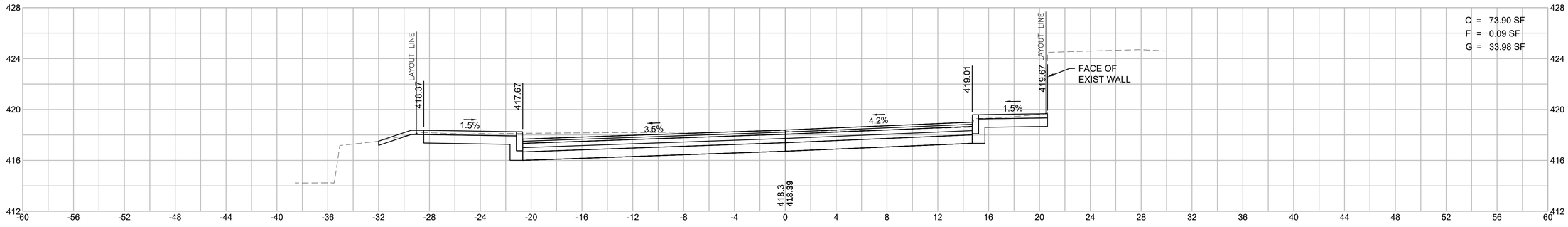
2+00



1+50



1+00



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