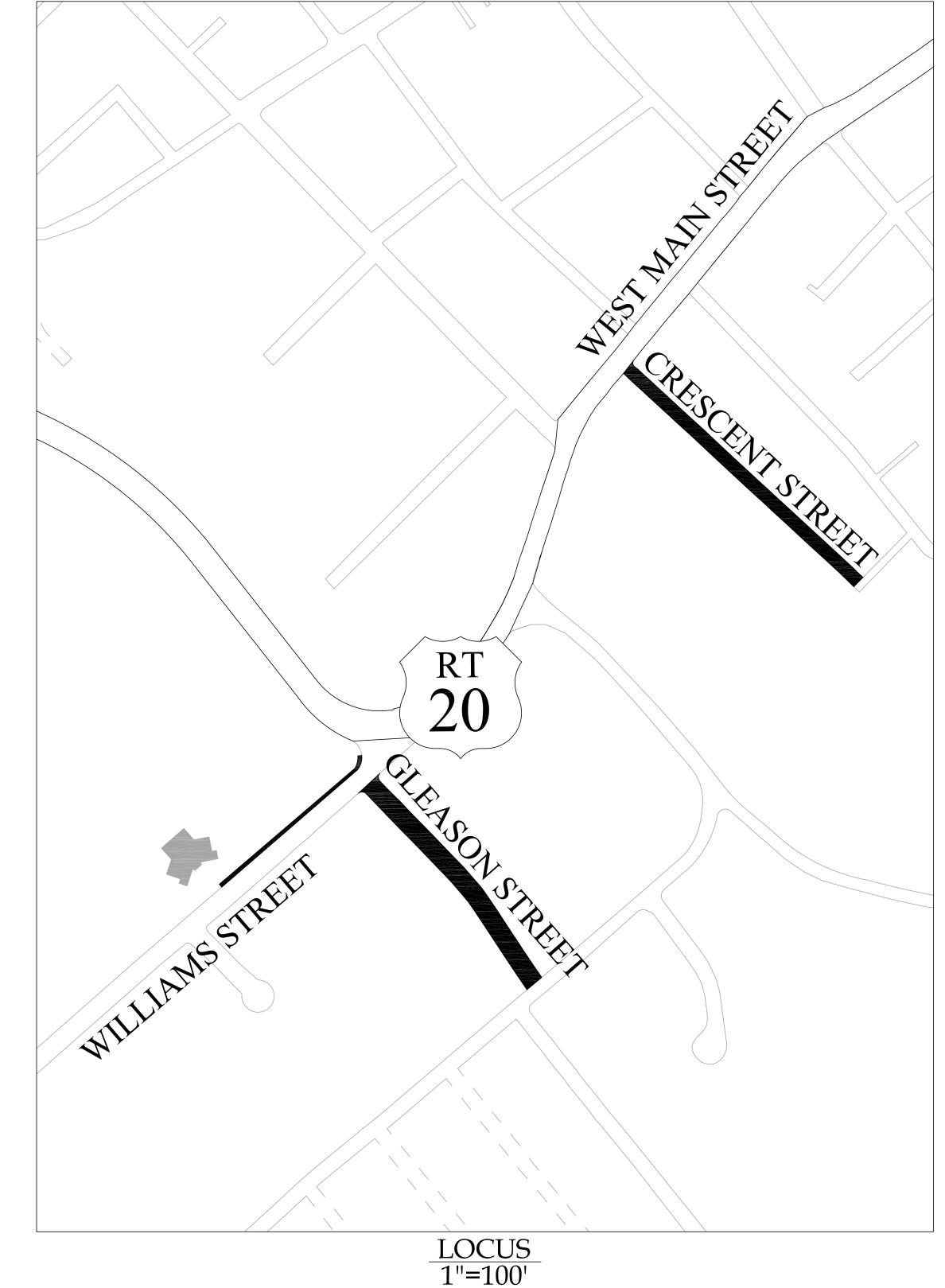
RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

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PREPARED BY: City of Marlborough

Department of Public Works
Engineering Division
135 Neil Street
Marlborough, MA 01752

CONTRACT NO. ED 2023-12 MAY 18, 2023 UNLESS OTHERWISE PROVIDED FOR IN THE PROJECT SPECIFICATIONS, THE FOLLOWING DOCUMENTS SHALL GOVERN THE CONSTRUCTION ON THIS PROJECT:

-THE 2023 MHD STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES....AS AMENDED

-THE 2006 PROJECT DEVELOPMENT & DESIGN GUIDE....AS AMENDED

- THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS HIGHWAY DIVISION AND ANY AMENDMENTS THERETO

-THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1)

LEGEND RIGHT OF WAY ______ EXISTING CONTOUR (MAJOR) — — — 100 — — — EXISTING CONTOUR (MINOR) — — — 98 — — — PROPOSED CONTOUR (MAJOR) PROPOSED CONTOUR (MINOR) PROPERTY LINE EASEMENT LINE TREELINE CHAIN LINK FENCE GAURDRAIL _____ WATER LINE SEWER LINE SEWER FORCE MAIN DRAIN LINE UNDERGROUND ELECTRIC TELECOMMUNICATIONS OVERHEAD WIRES — DHW — — — — HYDRANT GAS VALVE \bowtie WATER VALVE SANITARY SEWER MANHOLE STORM SEWER MANHOLE TELECOMMUNICATIONS MANHOLE ELECTRIC MANHOLE CATCH BASIN SIGN UTILITY POLE WATER SHUTOFF WATER MAIN CAP WATER MAIN TEE SHRUB HANDHOLD F.E.O. IRON PIN (FND) GUY POLE TRAFFIC LIGHT 0€ SPOT ELEVATION (EXISTING) 100.50 SPOT ELEVATION (PROPOSED) TOP/BOTTOM OF CURB TC/BC TOP/BOTTOM OF WALL TW/BW **--**\\\-FLOW ARROW HATCHES: STRUCTURE RIPRAP CONCRETE WETLANDS *NOTE: EXISTING INFRASTRUCTURE AND HATCHES ARE SHOWN IN LIGHT GRAY ON CONSTRUCTION PLANS

CONSTRUCTION ABBREVIATIONS

ADJ= ADJUST HMA= HOT MIX ASPHALT CB= CATCH BASIN CONC= CONCRETE DMH= DRAIN MANHOLE DWP= DETECTIBLE WARNING PANEL DYCL= DOUBLE YELLOW CENTERLINE GG= GAS GATE EOP= EDGE OF PAVEMENT EX= EXISTING GUY= GUY WIRE HH= HAND HOLE HYD= HYDRANT LCB= LAND COURT BOUND OHW= OVERHEAD WIRE PL= PROPERTY LINE PROP= PROPOSED R&D= REMOVE AND DISPOSE R&R= REMOVE AND RESET R&S= REMOVE AND STACK ROW= RIGHT OF WAY SMH= SEWER MANHOLE SW= SIDEWALK SWEL= SINGLE WHITE EDGE LINE TCB= TRAFFIC CONTROL BOX TYP= TYPICAL UP= UTILITY POLE WCR= WHEELCHAIR RAMP WG= WATER GATE

GLEASON STREET, CRESCENT STREET, AND FRANCIS STREET ROAD PAVEMENT NOTES

PROPOSED FULL RECLAMATION

SURFACE: 4.25" HOT MIX ASPHALT

(1.75" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5)) (2.5" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0))

ASPHALT EMULSION FOR TACK COAT AT 0.05 GAL/SY OVER INTERMEDIATE COURSE

SUB-BASE: 12" SUBBASE FOR RECLAIM

PROPOSED HOT MIX ASPHALT DRIVEWAY

SURFACE: 4" HOT MIX ASPHALT

(1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5)) (2.5" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5))

SUB-BASE: GRAVEL BORROW TYPE C

PROPOSED HOT MIX ASPHALT SIDEWALK

SURFACE: 3" HOT MIX ASPHALT

(1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5))

(1.5" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5))

SUB-BASE: 8" GRAVEL BORROW TYPE C

PROPOSED CEMENT CONCRETE SIDEWALK

SURFACE: 4" CEMENT CONCRETE AIR ENTRAINED 4,000 PSI, $\frac{3}{4}$, 610

SUB-BASE: 8" GRAVEL BORROW TYPE C

PROPOSED CEMENT CONCRETE DRIVEWAY/WHEELCHAIR RAMP

SURFACE: 6" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, $\frac{3}{4}$, 610

SUB-BASE: 8" GRAVEL BORROW TYPE C

CONSTRUCTION NOTES

1. BASE PLANS AND TOPOGRAPHIC INFORMATION WERE PREPARED FROM SURVEY DATA COMPILED BY THE CITY OF MARLBOROUGH, DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION.

2. EXISTING UTILITIES. WHERE SHOW HEREON. ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY LOCATING AND COORDINATING ANY ON-SITE ACTIVITY WITH DIG-SAFE AND THE APPROPRIATE UTILITY COMPANY AND MAINTAINING EXISTING UTILITY SYSTEM SERVICE. DIG-SAFE SHALL BE NOTIFIED PER THE COMMONWEALTH OF MASSACHUSETTS STATUTE CHAPTER 82, SECTION 40, AT 1-888-344-7233. NO GUARANTEE IS IMPLIED OR INTENDED AS TO THE ACCURACY, LOCATION OR THAT ALL UTILITIES AND/OR SUBSURFACE STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL VERIFY SIZE, LOCATION AND INVERTS OR UTILITIES AND STRUCTURES AS REQUIRED PRIOR TO THE START OF CONSTRUCTION.

3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH PROPOSED WORK, THE TYPE, LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE CITY ENGINEER FOR RESOLUTION OF THE CONFLICT.

4. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SEWER STRUCTURES AS NECESSARY FOR CHANGES IN GRADE AND RESET ALL WATER, SEWER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH GRADE. STRUCTURE ADJUSTMENTS SHALL REQUIRE THE USE OF RED CLAY BRICK CONFORMING TO M4.05.2 AND CEMENT CONCRETE CONFORMING TO M4.02.0 OF THE COMMONWEALTH OF MASSACHUSETTS CONSTRUCTION STANDARDS FOR HIGHWAY AND BRIDGES AS MOST RECENTLY AMENDED.

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

6. TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE CITY ENGINEER.

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

8. THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR WHERE APPLICABLE, AND APPROVED BY THE CITY ENGINEER, RE-USING EXISTING MATERIALS SUCH AS THOSE IDENTIFIED AS "REMOVE AND RESET" (R&R).

9. THE CONTRACTOR SHALL NOT ALLOW DEWATERING TO BE DIRECTLY DISCHARGED INTO WETLANDS, SEDIMENTATION BASINS SHALL BE CONSTRUCTED AS NECESSARY. NO WORK SHALL TAKE PLACE UNTIL SUCH TIME AS SILT SACS HAVE BEEN PLACED/INSTALLED IN EXISTING CATCH BASINS AND APPROVED BY THE CITY ENGINEER.

10. CONTRACTOR IS RESPONSIBLE FOR PROPER REMOVAL AND DISPOSAL OF ALL EXCESS MATERIALS SUCH AS PIPES AND SIGNS NOT PROPOSED FOR REUSE ON THIS PROJECT AT NO ADDITIONAL COST TO THE OWNER.

11. IT IS CRITICAL THAT THE CONTRACTOR STAY WITHIN THE RIGHT-OF-WAY LAYOUT OR LIMIT OF WORK AS SHOWN ON THE DRAWINGS. UTILITY SERVICE CONNECTIONS TO HOUSES AND BUISNESSES ARE NOT SHOWN OR ARE APPROXIMATES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING REPAIRS MADE TO ANY UTILITY SERVICES DISTURBED DURING EXCAVATION AT NO ADDITIONAL COMPENSATION.

12. JOINTS BETWEEN NEW HOT MIX ASPHALT, ROADWAY PAVEMENT, AND THE LOCATIONS OF SAW CUT FOR EXISTING PAVEMENT SHALL BE SEALED WITH HOT APPLIED ASPHALTIC CRACK FILLER.

13. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NECESSITY OF MAKING HIS OWN INVESTIGATION IN ORDER TO ASSURE THAT NO DAMAGE TO EXISTING STRUCTURES, DRAINAGE LINES, TRAFFIC SIGNAL CONDUITS, ETCETERA, WILL OCCUR. THE CONTRACTOR SHALL NOTIFY MASSACHUSETTS DIG SAFE AND PROCURE A DIG SAFE NUMBER FOR EACH LOCATION PRIOR TO DISTURBING EXISTING GROUND IN ANY WAY. NO EXISTING PUBLIC UTILITY STRUCTURES SHALL BE ABANDONED AND/OR DISMANTLED WITHOUT AUTHORIZATION FROM THE ENGINEER.

14. GAS MAINS AND TELEPHONE LINES ARE ASSUMED TO HAVE 3 FEET OF COVER UNLESS NOTED OTHERWISE. WATER MAINS ARE ASSUMED TO HAVE 5 FEET OF COVER UNLESS NOTED OTHERWISE. IT IS NOT WARRANTED THAT ALL UTILITIES ARE SHOWN OR THAT THEY ARE PLACED AT THESE ASSUMED DEPTHS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE RELOCATION OF ANY CONFLICTING UTILITIES WITH THE RESPECTIVE UTILITY COMPANY. RELOCATION OF UTILITIES AND/OR THEIR APPURTENANCES REQUIRED TO ACCOMMODATE THE NEW WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. FOR THE COST INFORMATION CONCERNING RELOCATION OF UTILITIES SEE SPECIFICATIONS GENERAL CONDITIONS 25 NOTICE TO UTILITIES.

15. ALL EXISTING STATE, COUNTY, CITY AND TOWN LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED.

16. ALL UNDERGROUND UTILITY WORK MUST BE COMPLETED AND TEMPORARILY PAVED AT THE END OF EACH WEEK OR PRIOR TO ANY RAIN EVENTS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

17. THE CONTRACTOR SHALL PROVIDE FOR SAFE AND ORDERLY PASSAGE OF VEHICULAR AND PEDESTRIAN TRAFFIC IN AREAS UNDER CONSTRUCTION.

18. ALL EXISTING CONCRETE. HMA WALKS OR PAVERS TO ABUTTING PROPERTIES SHALL BE REMOVED AND REPLACED IN KIND AS REQUIRED TO TRANSITION TO PROPOSED GRADES.

19. BACKFILL SHALL BE UNIFORMLY DISTRIBUTED IN SUCCESSIVE LAYERS, EACH LAYER BEING THOROUGHLY COMPACTED BEFORE THE SUCCEEDING LAYER IS PLACED. THE ENTIRE WIDTH OF THE TRENCH SHALL BE MECHANICALLY OR HAND TAMPED IN IN SIX (6) INCH LIFTS, A MINIMUM OF TWO (2) FEET ABOVE UTILITY INSTALATION, AND MECHANICALLY TAMPED THE REMAINDER OR THE FILL IN LIFT DEPTHS NOT GREATER THAN SIX (6) INCHES. THE TOP LAYER OF BACKFILL SHALL BE FOURTEEN (14) INCHES (IN A TEMPORARY TRENCH), AND TWELVE (12) INCHES (IN A PERMANENT TRENCH) OF GRAVEL COMPACTED TO 97% OF MAXIMUM DENSITY.

20. ALL STRUCTURES TO BE REMODELED UNLESS OTHERWISE NOTED.

21. ALL SEEDING WORK SHALL BE CARRIED OUT BY AN APPROVED SPRAYING MACHINE SPECIFICALLY USED FOR THIS WORK AND NOT PLACED BY HAND.

22. ALL DRIVEWAYS SHALL BE SAW-CUT AT BLENDING LIMITS SHOWN, OR AS DIRECTED BY THE ENGINEER.

23. ALL MAILBOXES TO BE REMOVED & RESET PER DETAIL. SEE SHEET. SLEEVES ARE TO BE LEFT FOR ALL MAILBOXES CURRENTLY ON HOUSES. WORK IS TO BE CONSIDERED INCIDENTAL TO ALL WORK.

24. THE SURFACE OF CEMENT CONCRETE SIDEWALK AND PEDESTRIAN CURB RAMP PANELS SHALL BE BROOM FINISHED AND BORDERED WITH A 1.5" FINISHING TROWEL.

25. MULCH FOR BLENDING DISTURBED AREAS SHALL MATCH EXISTING.

26. ROADWAY GRADES TO BE ADJUSTED TO ENSURE SIDEWALKS MEET ADA REQUIREMENTS.

27. SIDEWALK CROSS SLOPES SHALL BE AS SHOWN ON PROPOSED TYPICAL SECTIONS.

28. ALL SERVICE BOXES TO BE ADJUSTED UNLESS OTHERWISE NOTED.

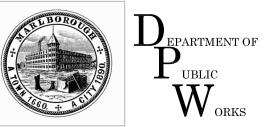
29. ALL WATER GATE BOX TOP SECTIONS TO BE REPLACED.

30. THE CONTRACTOR SHALL COORDINATE WITH EVERSOURCE GAS FOR THE ADJUSTMENT OF GAS GATES & SERVICE BOXES.

31. WHERE SHOWN, EROSION CONTROLS SHALL BE ERECTED AND APPROVED BY THE ENGINEER PRIOR TO START OF WORK. CONTRACTOR SHALL ENSURE THAT NO SILT-LADEN RUNOFF LEAVES THE WORK SITE.



VV ORKS



Engineering Division 135 Neil Street Marlborough, MA 01752 p. (508) 624-6910 www.marlborough-ma.gov

Description

Drawn By:	Designed By:	Checked By:	Approved By:
1J5	1J5	MJD	110

Project Title:

RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

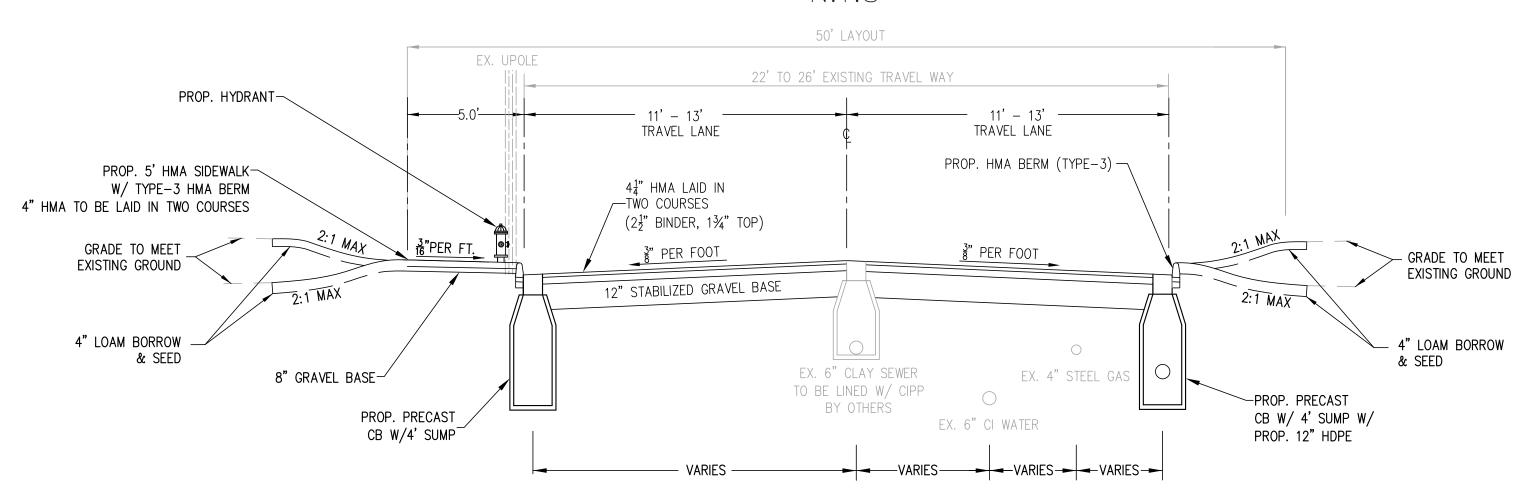
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Contract No: ED-2023-12	Sheet No.
Date: 5-18-2023	
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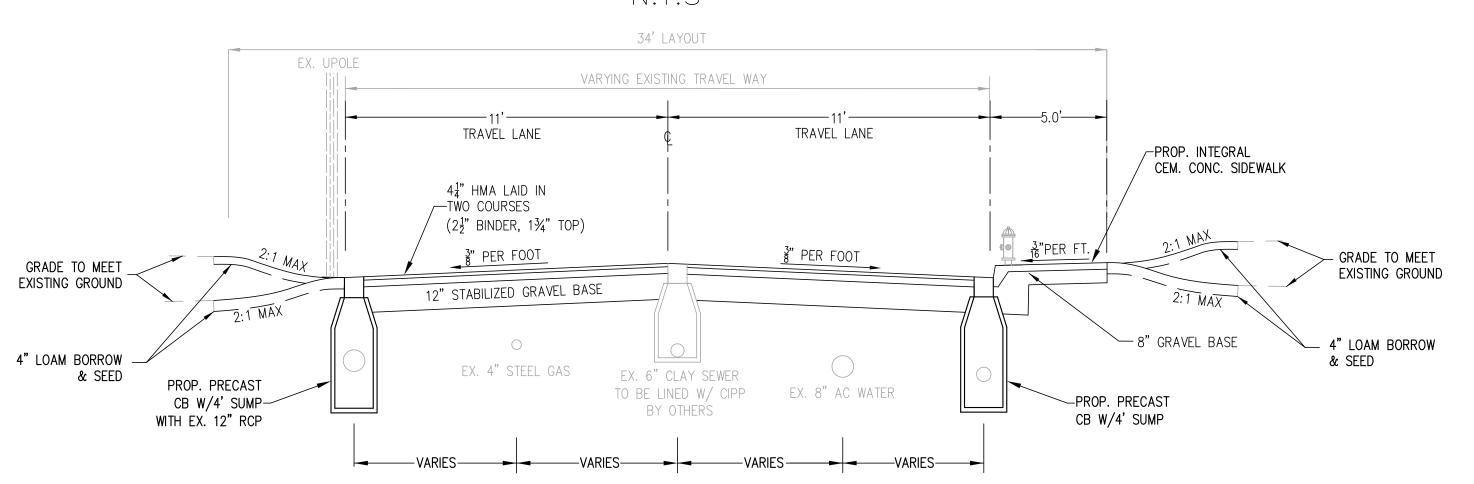
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N.T.S



CRESCENT STREET

STA. 0+00 TO STA. 8+29 N.T.S

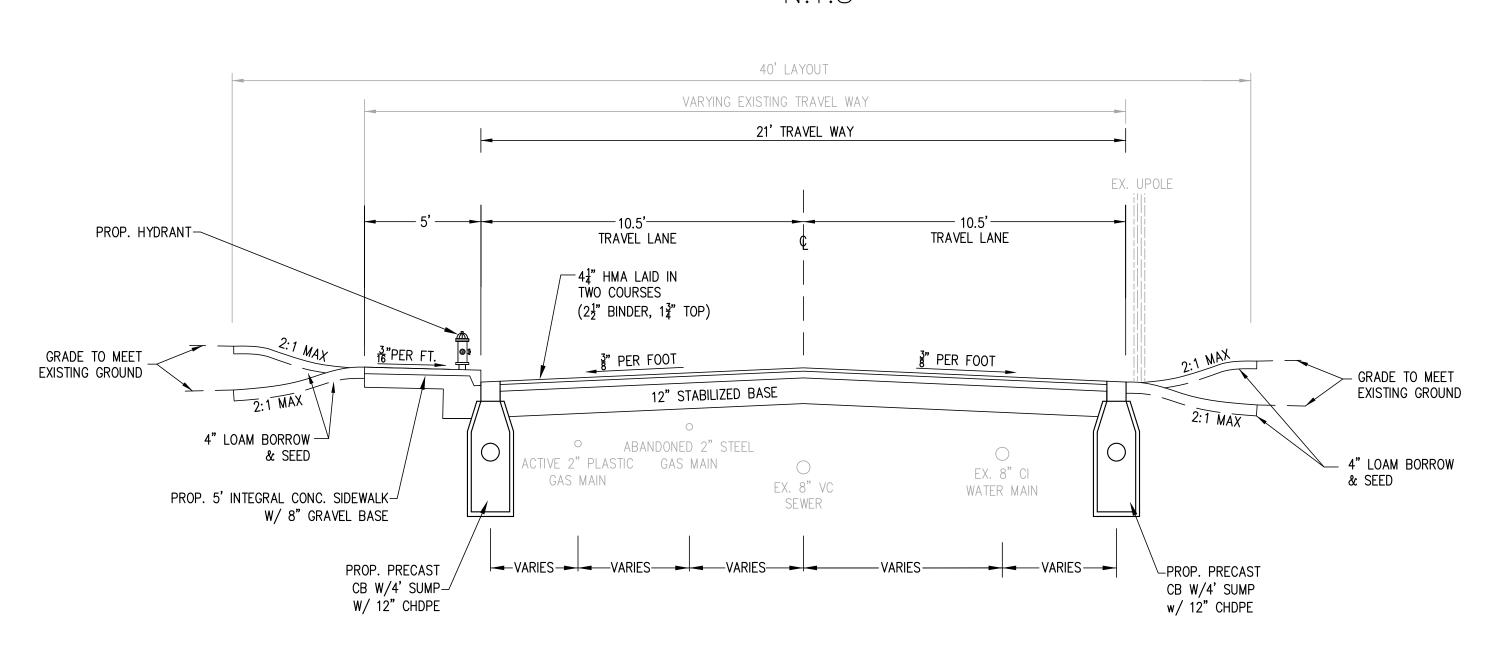


FRANCIS STREET

STA. 0+00 TO STA. 12+10 N.T.S

NOTES:

1. IT IS THE CITY'S INTENT TO HOLD THE EXISTING BACK OF SIDEWALK ELEVATION AND BUILD THE ROADWAY PER THE TYPICAL SECTIONS SHOWN.







Public Works

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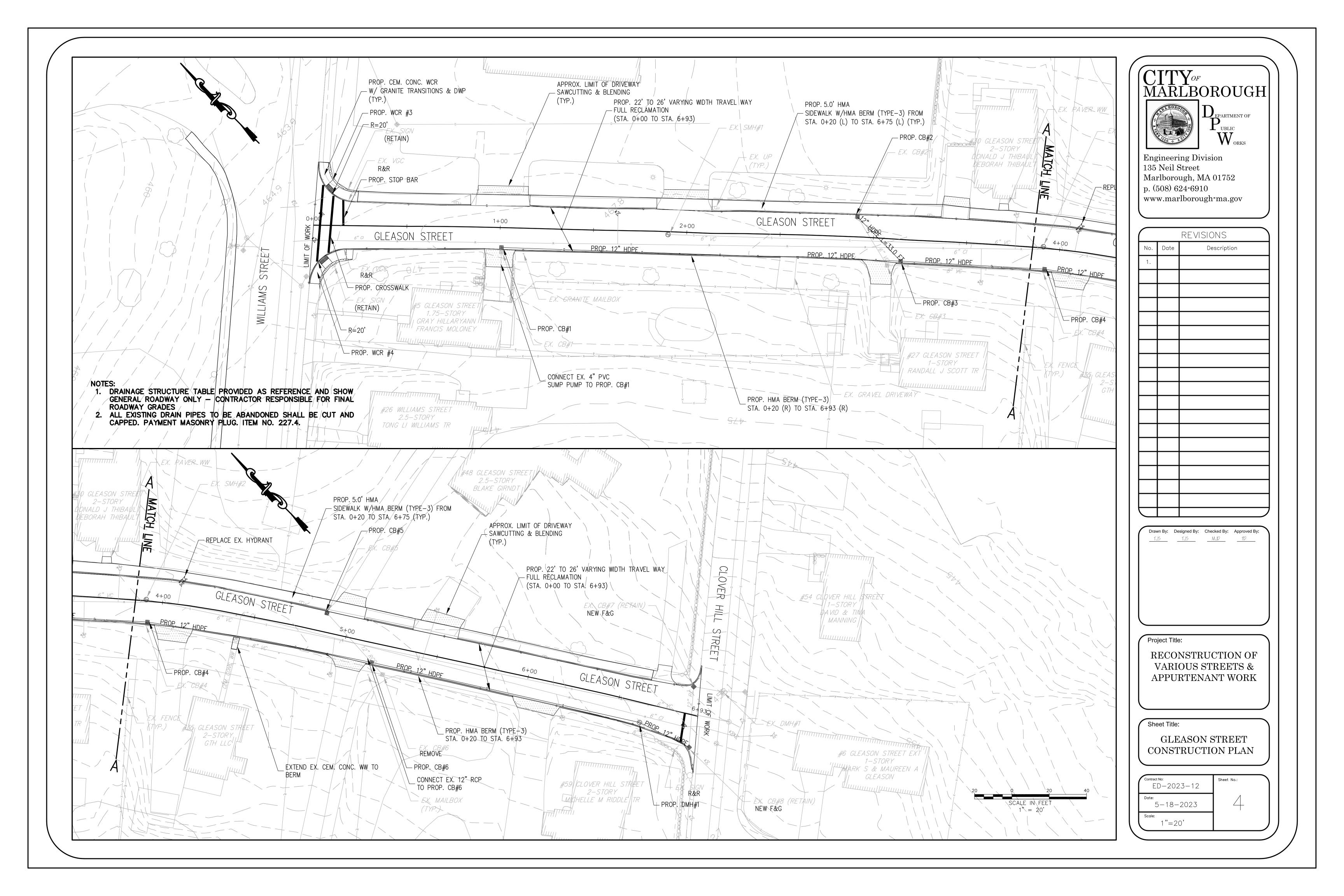
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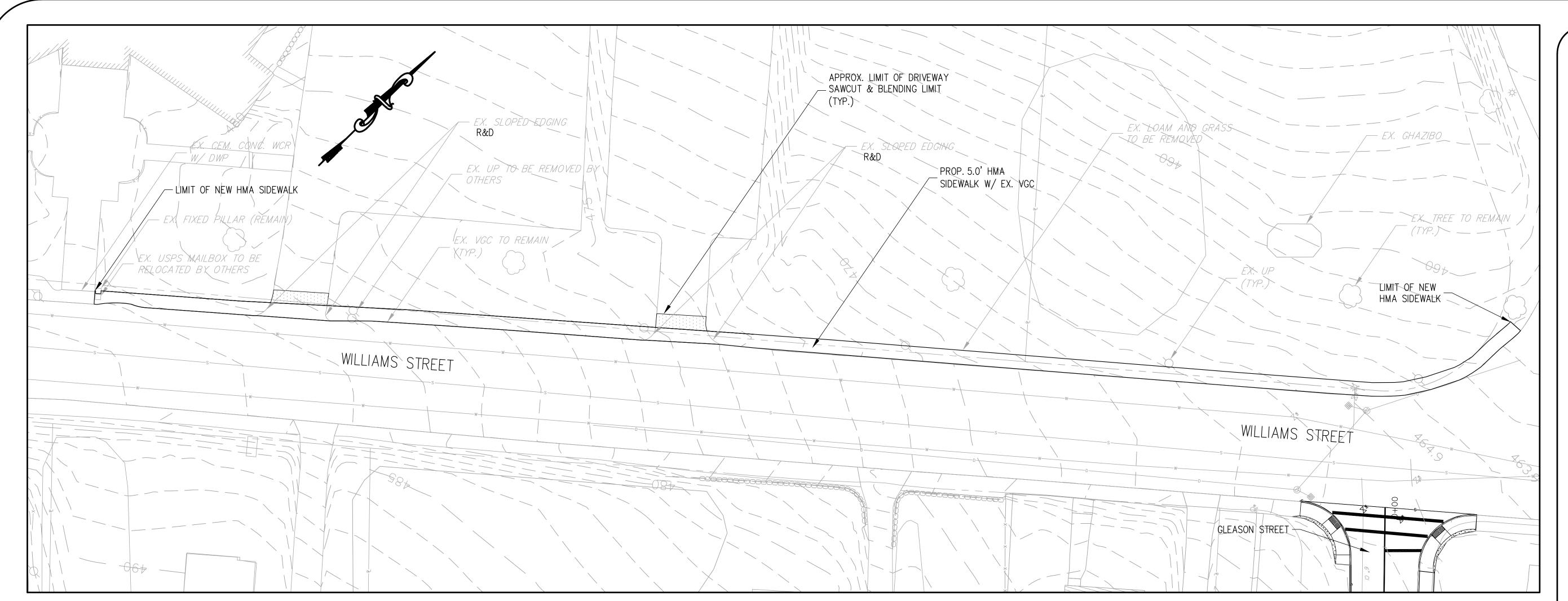
RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

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TYPICAL SECTIONS

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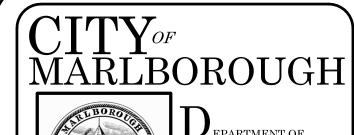


EXISTING GLEASON ST. STRUCTURES TABLE

STRUCTURE ID	STATION	RIM ELEV.	INV. IN ELEV.	INV. OUT ELEV.	REMARKS
EX. CB#1	1+00.64	467.11	(SERVICE) 465.11	(CB#3) 463.31	REMOVE
EX. SMH#1	1+89.96	467.78		(SMH#2) 461.48	REMODEL
EX. CB#2	2+91.46	465.44		(CB#3) 462.40	REMOVE
EX. CB#3	3+07.39	465.20	(CB#1) 462.60 (CB#2) 462.60	(CB#4) 462.40	REMOVE
EX. SMH#2	3+91.25	465.04	(SMH#1) 456.49	(SMH#1) 456.29	REMODEL
EX. CB#4	3+91.99	464.04	(CB#3) 461.19	(CB#6) 461.09	REMOVE
EX. CB#5	4+88.42	463.25		(CB#6) 460.79	REMOVE
EX. CB#6	5+23.44	463.19	(CB#4) 460.39 (CB#5) 460.39	(CB#8) 460.29	REMOVE
EX. CB#7	6+89.55	457.05	UNKNOWN	(DMH#1) 452.05	REMODEL
EX. CB#8	6+89.60	459.31	UNKNOWN	(CB#7) 453.01	F&G

PROPOSED GLEASON ST. DRAINAGE STRUCTURES TABLE

CTDUCTUDE ID		דורי דורי	INI\/	INIV	
STRUCTURE ID	STATION	RIM ELEV.	INV. IN ELEV.	INV. OUT ELEV.	REMARKS
PROP. CB#1	1+00.64	467.00	(SERVICE) 465.00	(CB#3) 463.33	
PROP. CB#2	2+91.46	465.36		(CB#3) 461.36	
PROP. CB#3	3+14.77	465.60	(CB#1) 460.70 (CB#2) 460.70	(CB#4) 460.50	
PROP. CB#4	3+91.99	464.40	(CB#3) 459.70	(CB#6) 459.50	
PROP. CB#5	4+88.42	463.15		(CB#6) 460.78	
PROP. CB#6	5+16.31	463.50	(CB#4) 458.50 (CB#5) 460.45	(DMH#1) 458.30	
PROP. DMH#1	6+63.93	463.15	(CB#6) 456.50	(CB#8) 456.30	





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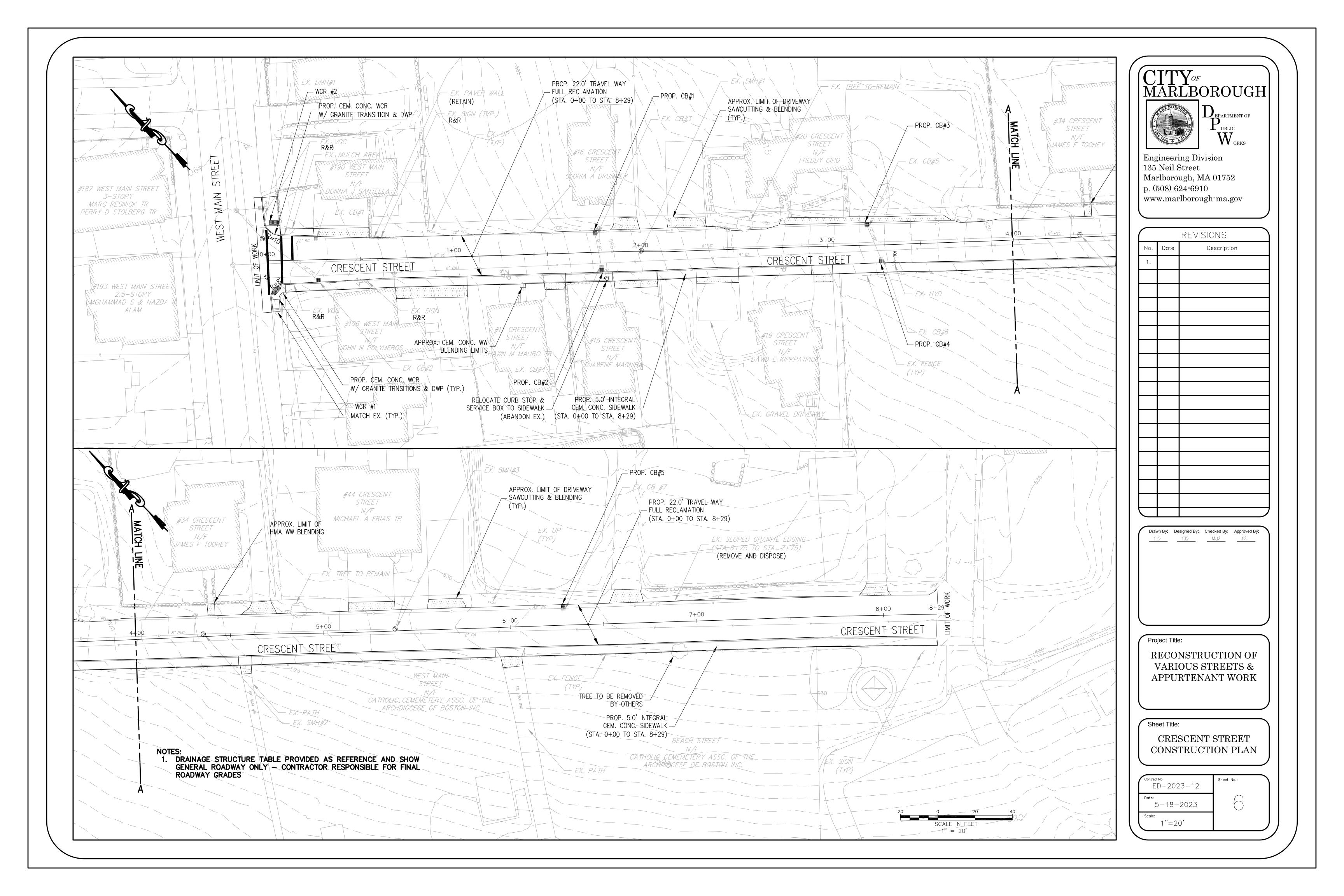
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RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

Sheet Title:
WILLIAMS STREET SW
CONSTRUCTION PLAN
& DRAINAGE TABLES

Contract No: ED-2023-12	Sheet No.:
Date: 5-18-2023	5
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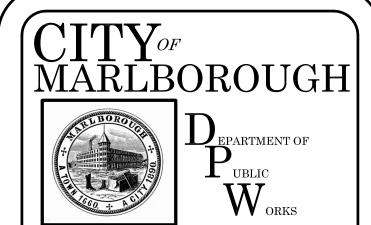


EXISTING CRESCENT ST. STRUCTURES TABLE

STRUCTURE ID	STATION	RIM ELEV.	INV. IN ELEV.	INV. OUT ELEV.	REMARKS
EX. DMH#1	0+00.00	449.22			NEW F&C
EX. CB#1	0+26.11	492.53	(CB#3) 489.20	(DMH#1) 489.20	NEW F&G
EX. CB#2	0+27.54	493.04		(DMH#1) 489.71	NEW F&G
EX. CB#3	1+76.57	504.46	(CB#4) 500.34 (CB#5) 499.82	(CB#1) 499.16	REMOVE
EX. CB#4	1+79.07	504.41		(CB#3) 500.43	REMOVE
EX. SMH#1	2+00.39	506.39	(SMH#2) 501.03	500.85	NEW F&C
EX. CB#5	3+21.33	515.07	(CB#6) 511.87 (CB#7) 511.87	(CB#3) 511.67	REMOVE
EX. CB#6	3+28.70	515.73		(CB#5) 512.13	REMOVE
EX. SMH#2	4+35.46	523.30	(SMH#3) 516.42	(SMH#1) 516.22	REMODEL
EX. SMH#3	5+38.27	528.84	522.54	(SMH#2) 522.34	REMODEL
EX. CB#7	6+28.32	531.40	8" CLAY 527.78	(CB#5) 527.02	REMOVE

PROPOSED CRESCENT ST. DRAINAGE STRUCTURES TABLE

		Ι	1		
STRUCTURE ID	STATION	RIM ELEV.	INV.	INV.	REMARKS
			IN ELEV.	OUT ELEV.	
PROP. CB #1	1+76.57	504.46	(CB #2) 500.34	<i>(EX. CB#1)</i> 499.16	
			(CB #3) 499.82		
PROP. CB #2	1+79.07	504.41		(CB #1) 500.43	
PROP. CB #3	3+21.33	515.07	(CB #4) 511.87	(CB #1) 511.67	
			(CB #5) 511.87		
PROP. CB #4	3+28.70	515.73		(CB#3) 512.13	
PROP. CB #5	6+28.32	531.40	8" CLAY 527.78	(CB#3) 527.02	



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Drawn By:	Designed By:	Checked By:	Approved By:
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Project Title:

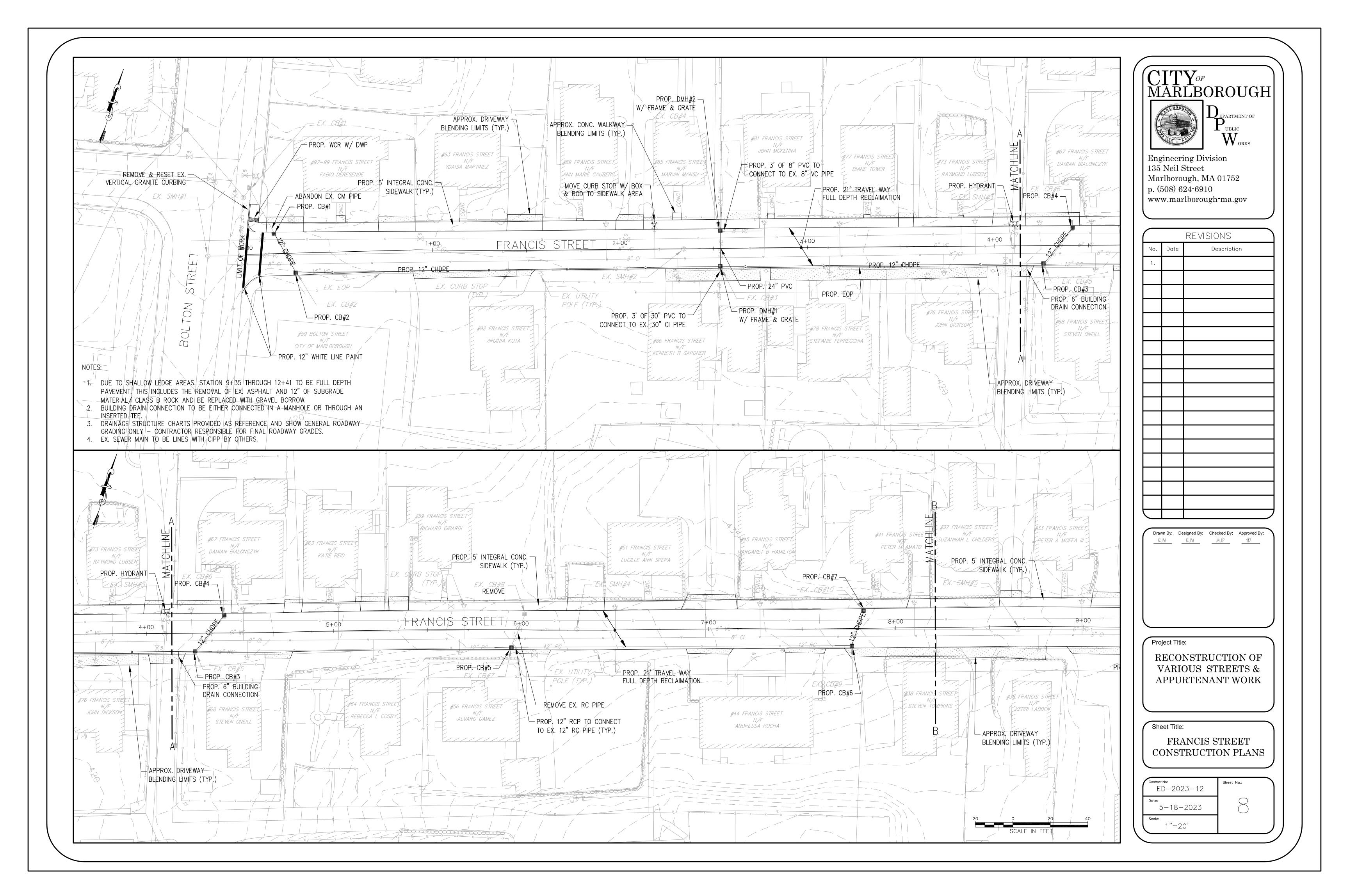
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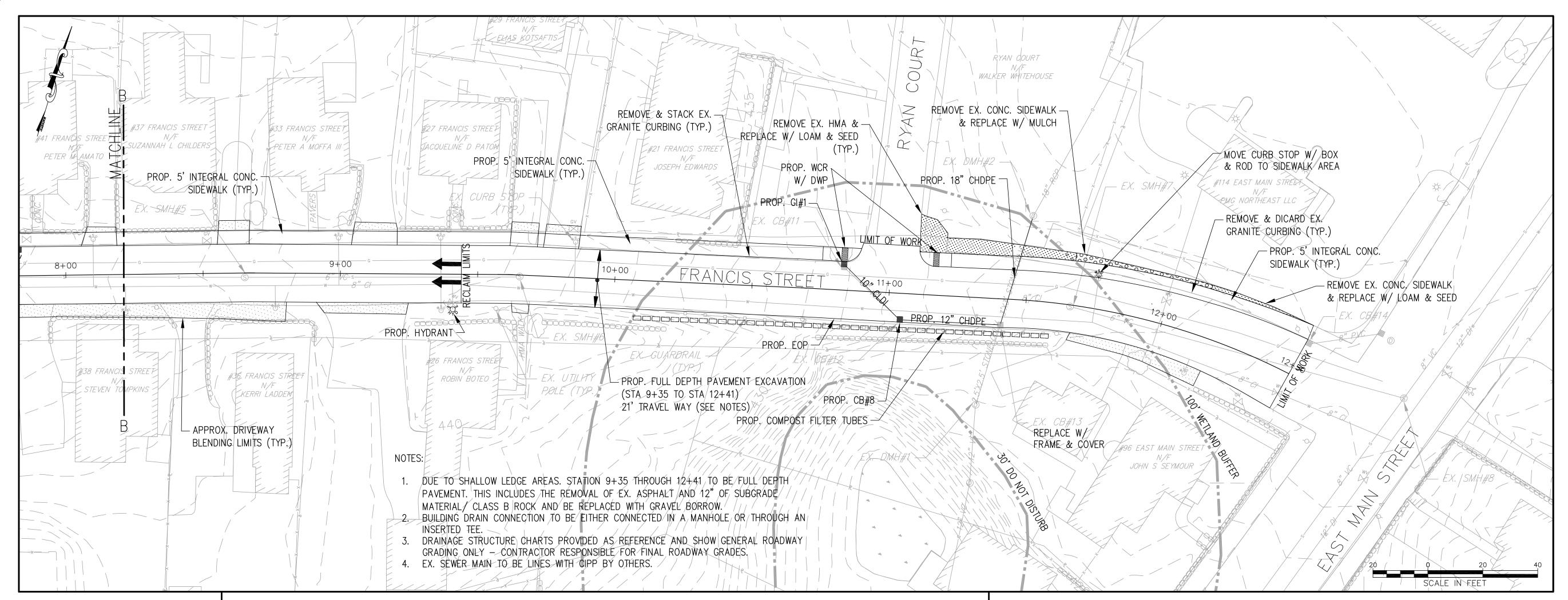
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CRESCENT STREET

DRAINAGE TABLES

ED-2023-12
Date: 5—18—2023
Scale:





FRANCIS STREET EXISTING STRUCTURE DATA FRANCIS STREET PROP. DRAINAGE STRUCTURE DATA

STRUCTURE ID	STATION	RIM ELEV.	INV. IN ELEV.	INV. OUT ELEV.	REMARKS
EX. SMH #1		422.60	(SMH#2) 407.18	(BOLTON) 407.10	REMAIN
EX. CB #1			(BOLTON)	(CB#2)	REMAIM
EX. CB #2	0+27.5	420.57	(CB#1) 417.59	(CB#3) 417.50	REMOVE
EX. SMH #2	2+33.9	419.26	(SMH#3) 412.65	(SMH#1) 412.48	REMODEL
EX. CB #3	2+53.6	418.98	(CB#2) 414.35 (CB#4) 409.88 (CB#5) 415.05	(EASEMENT) 409.70	REMOVE
EX. CB #4	2+53.6	418.64	(EASEMENT) 410.14 (UPHILL) 414.07	(CB#3) 410.04	REMOVE
EX. SMH #3	4+10.1	421.85	(SMH#4) 414.37	(SMH#2) 414.30	REMODEL
EX. CB #5	4+26.0	421.61	(CB#6) 418.46 (CB#7) 417.41	(CB#3) 417.41	REMOVE
EX. CB #6	4+41.2	422.18		(CB#5) 419.03	REMOVE
EX. CB #7	5+95.4	426.64	(CB#8) 422.64 (CB#9) 422.49	(CB#5) 421.29	REMOVE
EX. CB #8	6+01.5	426.99		(CB#7) 423.19	REMOVE
EX. SMH #4	6+29.7	428.46	(SMH#5) 421.50	(SMH#3) 421.40	REMODEL
EX. CB #9	7+76.9	433.49	(CB#10) 429.49	(CB#7) 428.69	REMOVE
EX. CB #10	7+81.9	433.23		(CB#9) 429.73	REMOVE
EX. SMH #5	8+65.3	436.28	(DEAD END) 430.83	(SMH#4) 430.72	REMODEL
EX. SMH #6	9+65.4	436.54	(DEAD END) 430.94	(SMH#7) 430.84	REMODEL
EX. CB #11	10+82.8	429.65		(CB#11) 427.85	REMOVE
EX. CB #12	11+04.4	428.08	(CB#11) 424.38	(CB#13) 423.28	REMOVE
EX. DMH #1	11+33.9	423.56	(CB#13) 406.04	(EASEMENT) 406.04	REMAIN
EX. CB #13	11+42.5	426.06	(DMH#2) 407.40	(DMH#1) 407.40	NEW F&C
			(PROP. CB#8) 421.99		
EX. DMH #2	11+47.9	424.64	(EASEMENT) 407.56	(CB#13) 407.56	REMAIN
EX. SMH #7	11+66.0	425.26		(SMH#8) 419.62	REMODEL
EX. CB#14	12+51.4	422.60		(BOLTON) 418.00	REMAIN
EX. SMH #8		422.05	(SMH#7) 417.57	(BOLTON) 405.57	REMAIN

STRUCTURE ID	STATION	RIM ELEV.	INV. IN ELEV.	INV. OUT ELEV.	REMARKS
PROP. CB #1	0+14.6	422.46		(CB#2) 418.46	
PROP CB #2	0+27.5	420.57	(CB#1) 417.70	(DMH#1) 417.50	
PROP. DMH #1	2+53.6	418.68	(CB#2) 414.35 (DMH#2) 409.88 (CB#3) 415.05	(EASEMENT) 409.70	
PROP. DMH#2	2+53.6	418.68	(EASEMENT) 410.14 (EX. 8" PIPE) 414.07	(DMH#1) 410.04	
PROP. CB #3	4+26.0	421.61	(CB#4) 417.41 (CB#5) 417.41	(DMH#1) 417.21	
PROP CB #4	4+42.0	422.00		(CB#3) 418.00	
PROP. CB#5	5+95.4	426.64	(CB#6) 422.64	(CB#9) 422.42	
PROP. CB#6	7+76.9	433.13	(CB#7) 429.13	(CB#5) 429.00	
PROP. CB#7	7+81.9	433.23		(CB#6) 429.73	
PROP. GI#1	10+82.8	429.65		(CB#8) 427.85	
PROP. CB#8	11+04.4	426.07	(GI#1) 424.38	(EX.CB#13) 423.28	





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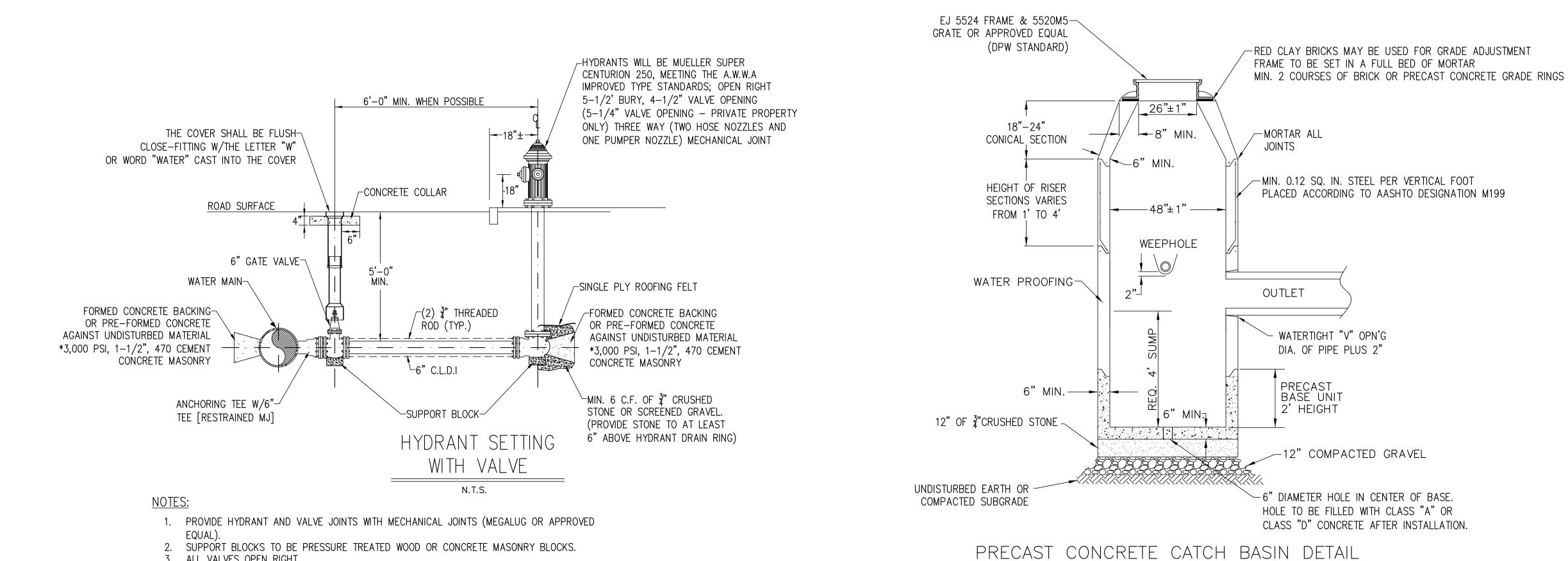
Project Title:

RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

Sheet Title: FRANCIS STREET CONSTRUCTION PLAN & DRAINAGE TABLES

Contract No: ED-2023-12	SI
Date: 5-18-2023	
Scale:	

1"=20'



/-SERVICE BOX [ERIE STYLE] EDGE OF PAVEMENT/CURBING 3" STAINLESS STEEL ROD WITH COUNTER SUNK 1" BRASS PLUG, WITH 1" PIPE THREAD, 4-1/2' TO 5-1/2' EXTENSION ROADWAY · 5' MIN. CORPORATION STOP --SERVICE BOX H.D. SLIDE PROVIDE ADAPTORS AS TOP WITH SLIDE BOTTOM REQUIRED (CITY STANDARD) -CONNECT CURB STOP TO EXISTING SERVICE. PROVIDE ADAPTORS AS REQUIRED. SHALL BE COPPER TO COPPER THREAD, OPEN RIGHT C.L.D.I. WATER MAIN -AS MANUFACTURED BY FARNUM OR MUELLER CO. ─3/4" MIN. COPPER TUBING TYPE-K

3. ALL VALVES OPEN RIGHT.

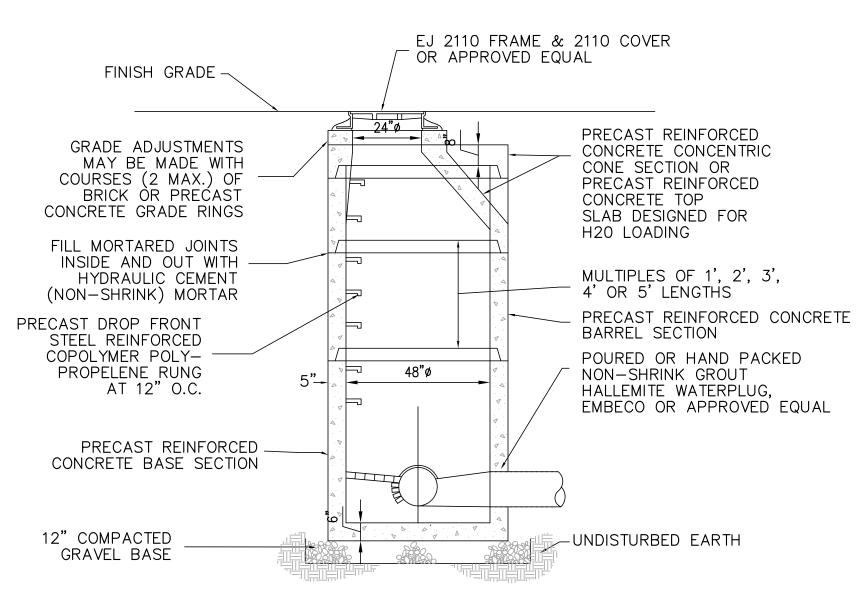
MECHANICAL JOINTS PRIOR TO POURING CONCRETE.

IN HYDRANT BRANCH A LOCKING RUBBER SHALL BE REQUIRED.

4. 6 MIL POLYETHYLENE SHALL BE PLACED BETWEEN THE THRUST BLOCK AND PIPE AT ALL

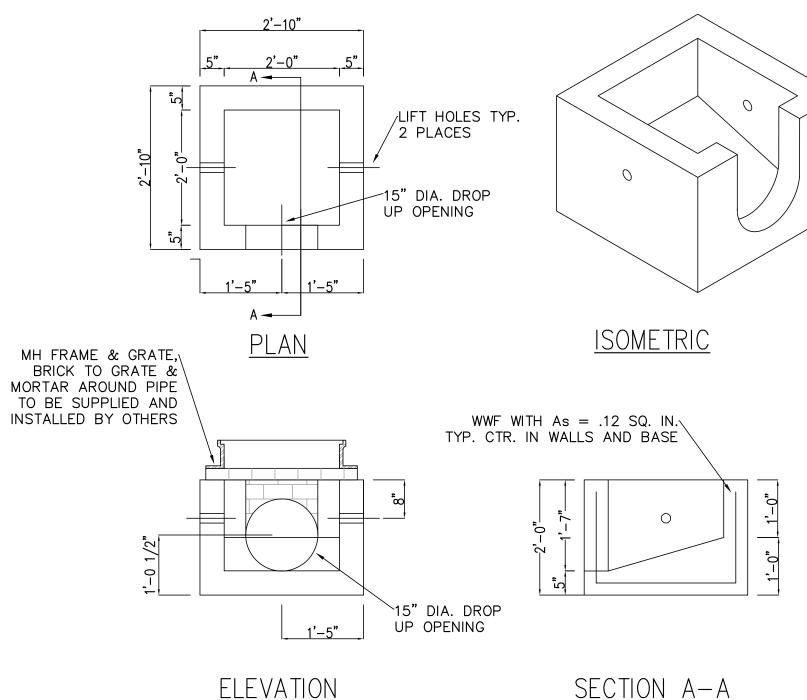
5. THREADED ROD IS NOT REQUIRED IF MEGA LUGS ARE USED. IF NORMAL PIPE JOINT IS NEEDED

TYPICAL N.T.S.



PRECAST CONCRETE DRAIN MANHOLE

N.T.S.



N.T.S.

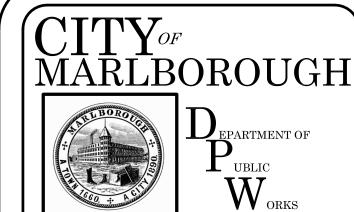
GENERAL NOTES: 1. DESIGNED FOR AASHTO HS25-44 LOADING

2. CONCRETE STRENGTH F'C=4000 PSI 3. REINFORCING STEEL: ASTM(WWF) FY=60,000PSI

4. WEIGHT = 0.76 TONS

TYPICAL GUTTER INLET BOX

N.T.S.



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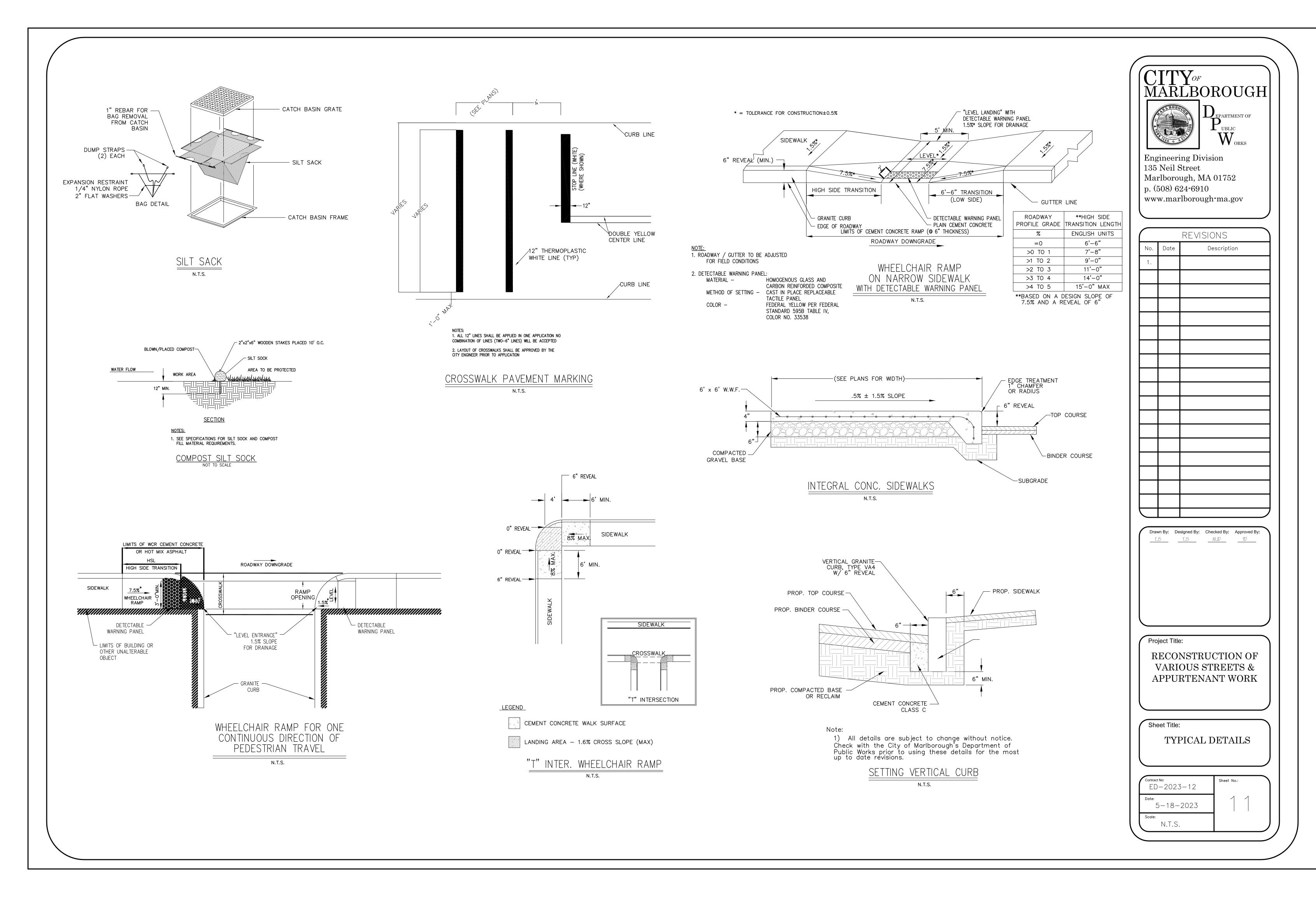
RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

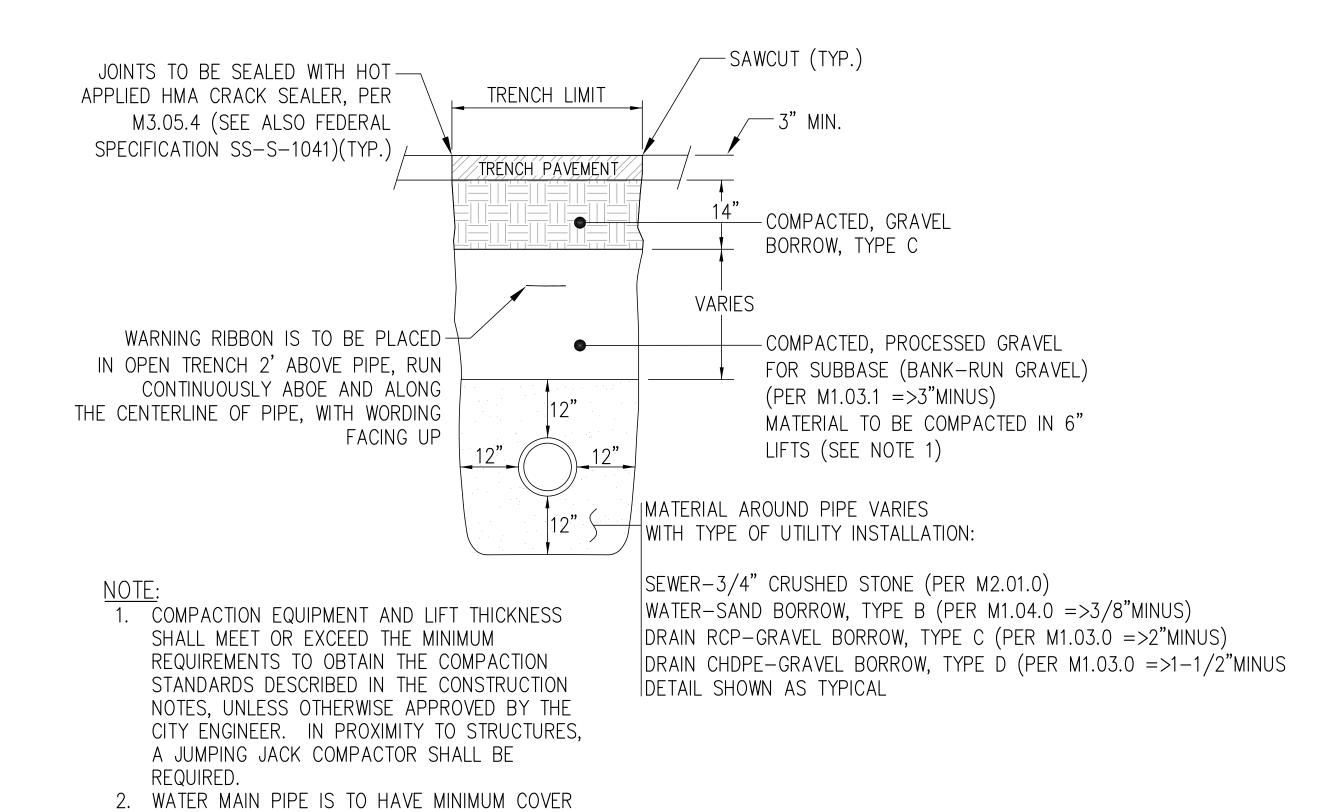
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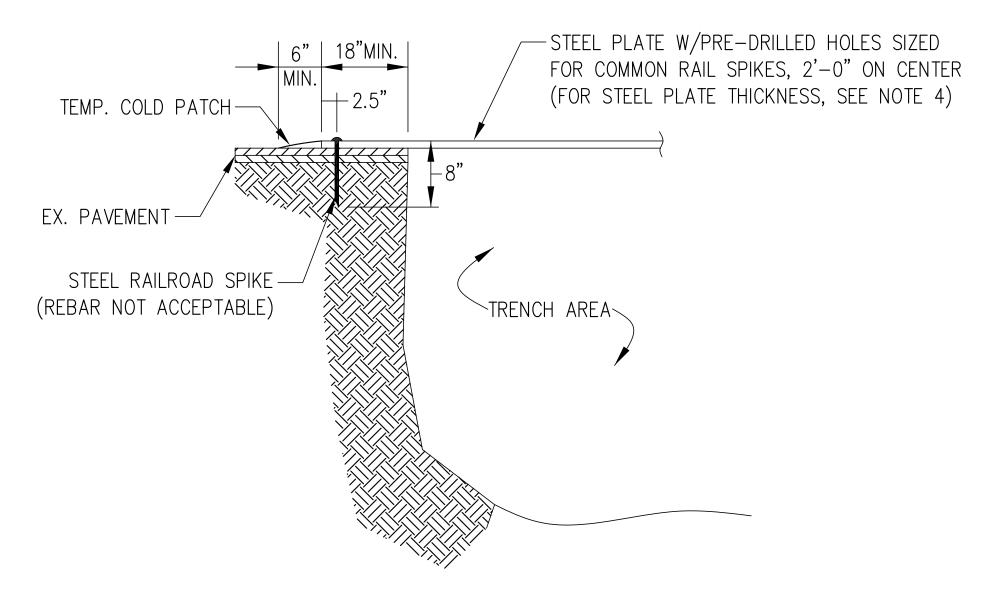
TYPICAL DETAILS

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TYPICAL EXCAVATION TRENCH N.T.S.



NOTE:

DEPTH OF 5 FEET FROM FINISHED SURFACE.

- 1. THE CITY RESERVES THE RIGHT NOT TO ALLOW THE USE OF STEEL PLATES TO SECURE TRENCHES AT ANY TIME THROUGHOUT CONSTRUCTION.
- 2. PLACE 48"X48" ORANGE AND BLACK CONSTRUCTION SIGN, STATING "STEEL PLATES 100 FT."
 TO PROVIDE DRIVERS WITH ADVANCED NOTICE. SEE TRAFFIC MANAGEMENT PLAN FOR
 PLACEMENT OF SIGNAGE.
- 3. NOT MORE THAN ONE (1) STEEL PLATE SHALL BE USED AT ANY TIME AND CAN NOT BE USED ON EXCAVATIONS GREATER THAN 7-FEET WIDE.
- 4. STEEL PLATE DIMENSIONS AND THICKNESS SHALL BE DESIGNED BY THE CONTRACTOR. STEEL PLATE THICKNESS SHALL BE DESIGNED TO ALLOW DEFLECTION OF NOT MORE THAN 0.25".
- 5. PROVIDE WOOD WEDGES UNDER PLATE EDGES AT UNEVEN SURFACES TO MINIMIZE MOVEMENT.

STEEL PLATE DETAIL

CONSTRUCTION NOTES

THE FOLLOWING DESCRIBES MATERIALS AND METHODS AS THEY PERTAIN TO ROAD OPENING WORK. ALL WORK SHALL CONFORM TO THE 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, AND ALL SUBSEQUENT SUPPLEMENTAL SPECIFICATIONS THERETO.

BACKFILL MATERIALS

EXCAVATIONS IN THE STREET PAVEMENT AREAS SHALL BE CAREFULLY BACKFILLED WITH LAYERS OF SUITABLE GRAVEL. THE TWELVE (12) INCHES OF BEDDING MATERIAL AROUND PIPES SHALL BE SAND (M1.04.0) FOR WATER, ³/₄" CRUSHED STONE (M2.01.0) FOR SEWER, GRAVEL BORROW — TYPE C (M1.03.0) FOR RCP DRAIN & TYPE D (M1.03.0) FOR CHDPE DRAIN OR AS SPECIFIED BY THE OWNER OF THE UTILITY AND APPROVED BY THE CITY OF MARLBOROUGH.

SUITABLE BANK-RUN GRAVEL MATERIAL FOR BACKFILLING SHALL BE GRANULAR FILL CONSISTING OF MINERAL SOIL SUBSTANTIALLY FREE FROM CLAY, ORGANIC MATERIALS, LOAM, WOOD, TRASH OR OTHER OBJECTIONABLE MATERIAL WHICH MAY NOT BE COMPRESSIBLE OR WHICH CANNOT BE PROPERTY COMPACTED. IT SHALL NOT CONTAIN STONES, BROKEN CONCRETE, MASONRY RUBBLE OR OTHER SIMILAR MATERIALS. IT SHALL HAVE PHYSICAL PROPERTIES SUCH THAT IT CAN BE READILY SPREAD AND COMPACTED. IT SHALL NOT CONTAIN ANY SNOW. ICE OR FROZEN SOIL.

BACKFILL MATERIAL SHALL CONSIST OF CONTROLLED DENSITY FILL (CDF) — TYPE 1E OR 2E (M4.08.0) FOR ALL MAJOR ROADWAYS OF THE CITY OR AS DIRECTED BY THE COMMISSIONER OF PUBLIC WORKS. WHERE REQUIRED, CDF SHALL BE PLACED TO WITHIN A MINIMUM OF 5" FROM THE TOP OF THE EXISTING PAVEMENT OR AS DIRECTED BY THE CITY'S INSPECTOR. CDF SHALL BY TYPE 1E VERY FLOWABLE (EXCAVATABLE) OR TYPE 2E FLOWABLE (EXCAVATABLE) WITH A MAXIMUM STRENGTH OF 200 PSI AND 25-30% AIR. CDF (TYPE 1E AND 2E) SHALL BE EXCAVATABLE USING SIMPLE HAND TOOLS WHERE REQUIRED.

IF CONTROL DENSITY FILL IS USED TO BACKFILL THE TRENCH, PERMANENT TRENCH PAVING CAN BE PERFORMED ONCE THE CONTROL DENSITY FILL HAS SET, ELIMINATING THE TEMPORARY TRENCH PAVING REQUIREMENT. PROOF OF CONTROL DENSITY FILL SHALL BE REQUIRED IN ORDER TO BE GRANTED RELIEF FROM PERMANENT TRENCH PAVING. PLEASE NOTE, SHOULD THE TRENCH SHOW ANY SIGNS OF FAILURE, THE CONTRACTOR SHALL EXCAVATE THE HOT MIX ASPHALT IN QUESTION AND PERFORM TRENCH PAVING MEETING THE CITY OF MARLBOROUGH'S SPECIFICATIONS.

COMPACTION OF BACKFILL

BACKFILL SHALL BE UNIFORMLY DISTRIBUTED IN SUCCESSIVE LAYERS, EACH LAYER BEING THOROUGHLY COMPACTED BEFORE THE SUCCEEDING LAYER IS PLACED. THE ENTIRE WIDTH OF THE TRENCH SHALL BACKFILLED AND MECHANICALLY TAMPED IN LIFT DEPTHS NOT GREATER THAN (6) INCHES. COMPACTION EQUIPMENT AND LIFT THICKNESS SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS TO OBTAIN THE COMPACTION STANDARDS UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. THE TOP LAYER OF BACKFILL SHALL BE FOURTEEN (14) INCHES OF GRAVEL COMPACTED TO 97% OF MAXIMUM DENSITY.

GRADING ROLLING AND FINISHING

PAVEMENT PLACED SHALL BE PLACED AND RAKED TO A UNIFORM SURFACE, ROLLED TO THE REQUIRED THICKNESS AND TO A GRADE THAT WILL MATCH THE EXISTING BITUMINOUS ROAD SURFACE. THE PERMITTEE SHALL MAINTAIN THE SURFACING AND SHALL PROMPTLY FILL WITH SIMILAR MATERIAL ANY DEPRESSION AND HOLES THAT MAY OCCUR SO AS TO KEEP THE SURFACING IN A SAFE AND SATISFACTORY CONDITION FOR TRAFFIC.

TEMPORARY PAVEMENT

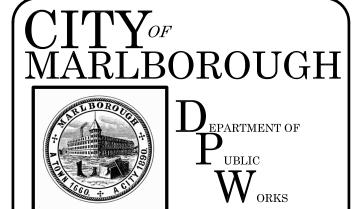
A TEMPORARY PAVEMENT SHALL BE PLACED ON THE SURFACE OF THE FILL AND THOROUGHLY COMPACTED. A TEMPORARY PAVEMENT SHALL BE HOT MIX ASPHALT NO LESS THAN THE EXISTING BASE COURSE OR A MINIMUM THREE (3) INCHES THICK (SEE EXCAVATION TRENCH DETAIL). IF PLATES ARE USED PRIOR TO TEMPORARY PAVING, THEY SHALL BE RAMPED TO MATCH THE EXISTING PAVEMENT. TEMPORARY PAVING OR STEEL PLATING SHALL IMMEDIATELY FOLLOW THE BACKFILLING OPERATION OR AS DIRECTED BY ENGINEER.

PERMANENT PAVING

THE FINAL HOT MIX ASPHALT SURFACE SHALL NOT BE PLACED ANY EARLIER THAN 65 DAYS OR NO LATER THAN 90 DAYS FROM THE DATE OF COMPLETION OF THE TEMPORARY SURFACE WITHOUT APPROVAL FROM THE COMMISSIONER OF PUBLIC WORKS. THE TEMPORARY PAVEMENT SHALL BE MILLED TO A DEPTH OF ONE AND ONE—HALF (1 $\frac{1}{2}$) INCHES, TWELVE (12) INCHES OUTSIDE OF THE TEMPORARY PAVING LIMITS. PAVEMENT LIMITS JOINTS ARE TO BE SEALED WITH HOT APPLIED HMA CRACK SEALER, PER M3.05.4. IN SOME INSTANCES, FOR PROJECTS BEYOND A SIMPLE TRENCH EXCAVATION ADDITIONAL PAVEMENT DETAILS AND RESURFACING REQUIREMENTS MAY BE INCLUDED AS A SPECIAL CONDITION IN THE PERMIT.

PROTECTIVE SYSTEMS

ALL EXCAVATIONS MUST BE PROPERLY SLOPED, SHORED, OR SHIELDED UNLESS THEY ARE MADE ENTIRELY IN STABLE ROCK, OR LESS THAN (5) FEET DEEP AND DECLARED SAFE AFTER AN INSPECTION BY A COMPETENT PERSON.



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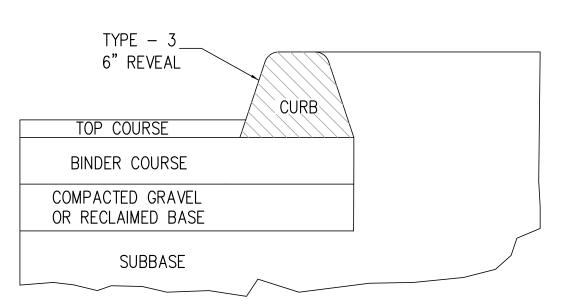
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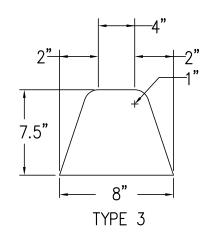
RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

Sheet Title:

TYPICAL DETAILS

Contract No: ED-2023-12	Sheet No.:
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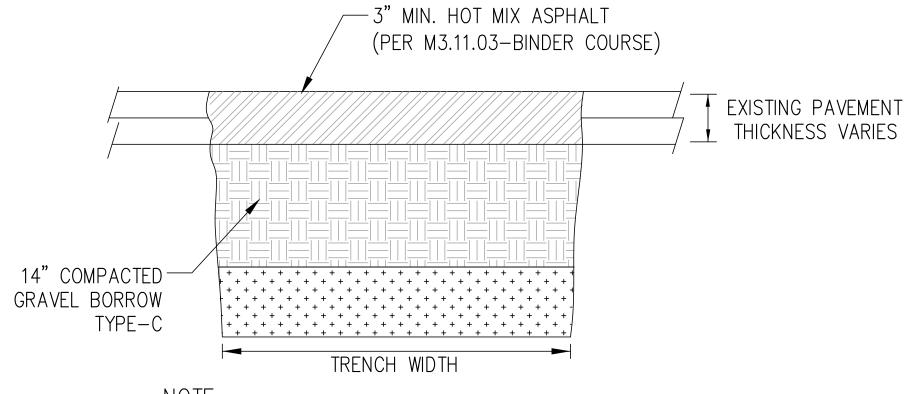




METHOD OF SETTING-TYPICAL FOR ALL TYPES

1) All details are subject to change without notice. Check with the City of Marlborough's Department of Public Works prior to using these details for the most up to date revisions.

HMA CURB (TYPE-3) N.T.S.



1. COMPACTION EQUIPMENT AND LIFT THICKNESS SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS TO OBTAIN THE COMPACTION STANDARDS DESCRIBED IN THE CONSTRUCTION NOTES, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. IN PROXIMITY TO STRUCTURES, A JUMPING JACK COMPACTOR SHALL BE REQUIRED.

TEMPORARY TRENCH PAVING TYPICAL SECTION

N.T.S.

/3" HMA TEMPORARY EXISTING PAVEMENT-14" COMPACTED —GRAVEL BORROW, TYPE B GRAVEL BORROW, (PER M1.03.0) TYPE C 5'-0" MIN. COVER NO STONE LARGER THAN--WARNING RIBBON 3" IN DIAMETER MAY BE TO BE PLACED 2' USED WITHIN ONE FOOT ABOVE TOP OF PIPE OF THE WATER MAIN 1. TEMPORARY PAVEMENT TO REMAIN IN PLACE -MIN. 12" AROUND PIPE TO FOR A MINIMUM OF 65 DAYS MAXIMUM OF 90 BE BACKFILLED WITH SAND DAYS, TO BE COMPLETELY REMOVED DURING

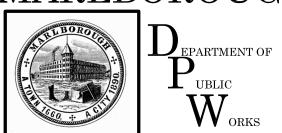
FINAL PAVING. 2. COMPACTION EQUIPMENT AND LIFT THICKNESS SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS TO OBTAIN THE COMPACTION STANDARDS DESCRIBED IN THE CONSTRUCTION NOTES, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. IN PROXIMITY TO STRUCTURES, A JUMPING JACK COMPACTOR SHALL BE REQUIRED.

TYPICAL N.T.S.

MARLBOROUGH

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Designed By:		Approved By
 	MJD	

Project Title:

RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

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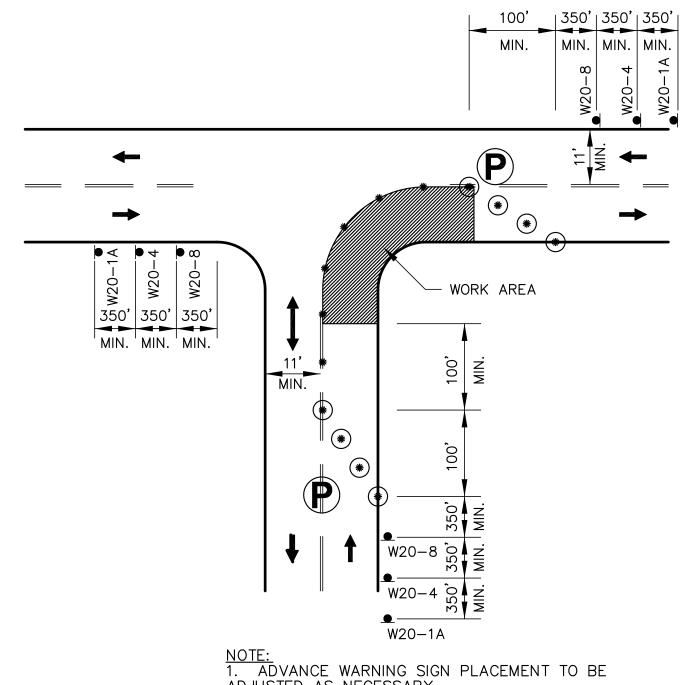
TYPICAL DETAILS

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CONSTRUCTION SIGN LEGEND

IDENTIFICATION		OF SIGN	TEVT	TEXT DIMENSIONS COLOR			UNIT AREA IN	
NUMBER	WIDTH	HEIGHT	TEXT	LETTER VERTION HEIGHT SPACE	CAL ING ARROW	BACK- GROUND	LEGEND BORDER	SQUARE FEET
W20-1D	48"	48"	STEEL PLATES 100 FT	MUT STANDARE		STA	MUTCD NDARD DETAIL	16.0
W20-1A	48"	48"	ROAD WORK AHEAD					16.0
W20-1B	48"	48"	ROAD WORK 1000 FT					16.0
W20-1C	48"	48"	ROAD WORK 500 FT					16.0
W20-4	48"	48"	ONE LANE ROAD AHEAD					16.0
W20-7b	48"	48"	BE PREPARED TO STOP					16.0
W20-8	48"	48"	POLICE OFFICER AHEAD					16.0
G20-2	36"	18"	END ROAD WORK					4.5
R11-2	48"	30"	ROAD CLOSED					10.0
W5-1	48"	48"	ROAD NARROWS					16.0
W1-4L	30"	30"						6.25
W1-4R	30"	30"						6.25
M4-8A	24"	18"	END DETOUR					3.0
M4-9L	30"	24"	DETOUR					5.0
M4-9R	30"	24"	DETOUR					5.0
M4-9V	30"	24"	DETOUR					5.0
W20-2	48"	48"	DETOUR AHEAD					16.0
W20-2A	36"	18"	BOLTON ST WATER MAIN REPLACEMENT DETOUR					4.5
W20-2B	48"	48"					•	16.0

SINGLE DIRECTION TRAFFIC FLOW ARROW DOUBLE DIRECTION TRAFFIC FLOW ARROW CONE TRAFFIC MANAGEMENT SIGN POLICE DETAIL P TRAFFIC BARREL / DRUM SPECIAL LIGHTING UNIT SLU (LT) CHANGEABLE MESSAGE SIGN PROPOSED WORK AREA

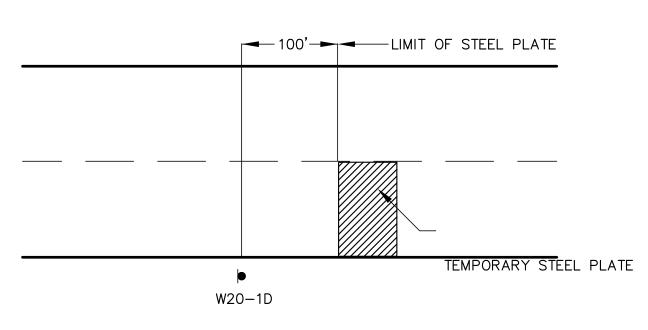


NOTE:
1. ADVANCE WARNING SIGN PLACEMENT TO I ADJUSTED AS NECESSARY.
2. ALL DRUMS AND CONES TO BE SPACED

© 20' O.C.

ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTIONS

N.T.S.



TRENCH PLATE SIGNING

N.T.S.

GENERAL NOTES

1. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED.

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

3. 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.

4. DURING WORK IN INTERSECTIONS A MINIMUM OF ONE LANE OF ALTERNATING TRAFFIC SHALL BE ALLOWED TO PASS AT ALL TIMES. (POLICE DETAILS SHALL BE PRESENT DURING THIS WORK.)

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

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

7. 11' MINIMUM TRAVEL LANE WIDTHS SHALL BE MAINTAINED AT ALL TIMES.

8. NON-ESSENTIALS TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS.

9. TRAFFIC MANAGEMENT SHALL INCLUDE CONSIDERATIONS FOR PEDESTRIANS ACCESS AT ALL TIMES.

10. NO SIGNAGE SHALL BE INSTALLED ON UTILITY POLES OR OTHER PRIVATE PROPERTY UNLESS CONTRACTOR RECEIVES WRITTEN PERMISSION FROM OWNER AND PROVIDES A COPY OF SAID AGREEMENT TO THE ENGINEER.

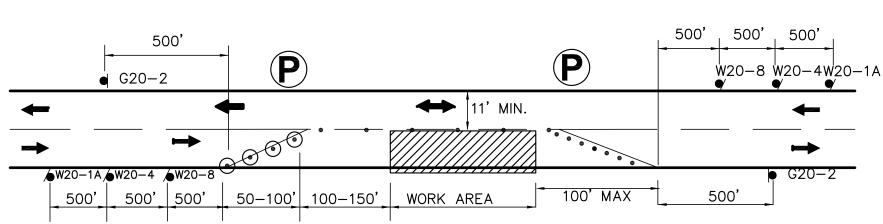
11. SPECIFIC SIGNAGE SHALL BE USED WHEN TEMPORARY TRENCH PLATES ARE INSTALLED. (SEE DETAIL ON THIS SHEET).

12. TRAFFIC MANAGEMENT PLAN REPRESENTS MINIMUM REQUIREMENTS. CONTRACTOR TO BE SOLELY RESPONSIBLE FOR TRAFFIC MANAGEMENT AND SAFETY IN WORK ZONE AREAS. DETOUR SHALL ONLY BE ESTABLISHED AND/OR ALTERED BY WITH THE APPROVAL OF THE ENGINEER.

13. THE PLACEMENT OF THE VARIABLE MESSAGE BOARDS SHALL BE IN PLACE TWO WEEKS PRIOR TO THE START OF CONSTRUCTION. THESE BOARDS ARE TO BE PAID FOR UNDER ITEM NO. 851 SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS.

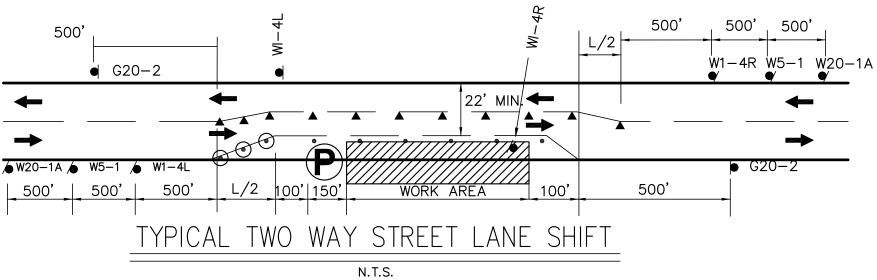
14. HOURS OF WORK SHALL BE MONDAY-FRIDAY 7:00 A.M. - 3:30 P.M.

15. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE RESPECTIVE PUBLIC SERVICE CORPORATIONS OR OFFICIALS OF THEIR INTENTIONS AT LEAST ONE WEEK IN ADVANCE OF THE COMMENCEMENT OF OPERATIONS. THE CONTRACTOR MAY HAVE TO COORDINATE ON A DAILY BASIS IF THE DETOUR OR WORK ZONES HAVE CHANGED. FOR A LIST OF SAID CORPORATIONS PLEASE SEE THE CONTRACT DOCUMENTS "GENERAL CONDITIONS".



TYPICAL TWO WAY ALTERNATING TRAFFIC

NOTE: THIS DETAIL SHOWS A RIGHT LANE CLOSURE DETAIL. THIS DETAIL CAN ALSO BE USED FOR LEFT LANE CLOSURES, WITH THE SIGN PLACEMENT REVERSED AS APPROPRIATE.



NOTE: THIS DETAIL SHOWS A RIGHT LANE CLOSURE DETAIL. THIS DETAIL CAN ALSO BE USED FOR LEFT LANE CLOSURES, WITH THE SIGN PLACEMENT REVERSED AS APPROPRIATE.

L=WS²/60 (FEET) FOR 40 MPH OR LESS L=WS FOR 45 MPH OR MORE

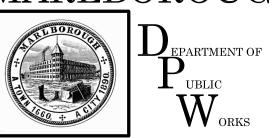
OPERATIONAL SIGNING
N.T.S.

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

W=WIDTH OF OFFSET (FT)

S= POSTED SPEED LIMIT (MPH)





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Project Title:

RECONSTRUCTION OF VARIOUS STREETS & APPURTENANT WORK

Drawn By: Designed By: Checked By: Approved By:

Sheet Title:

TRAFFIC MANAGEMENT PLAN

Contract No: ED-2023-12	Sheet No.:
Date: 5-18-2023	14
Scale: N.T.S.	