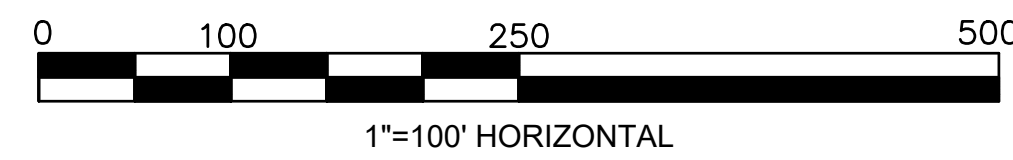
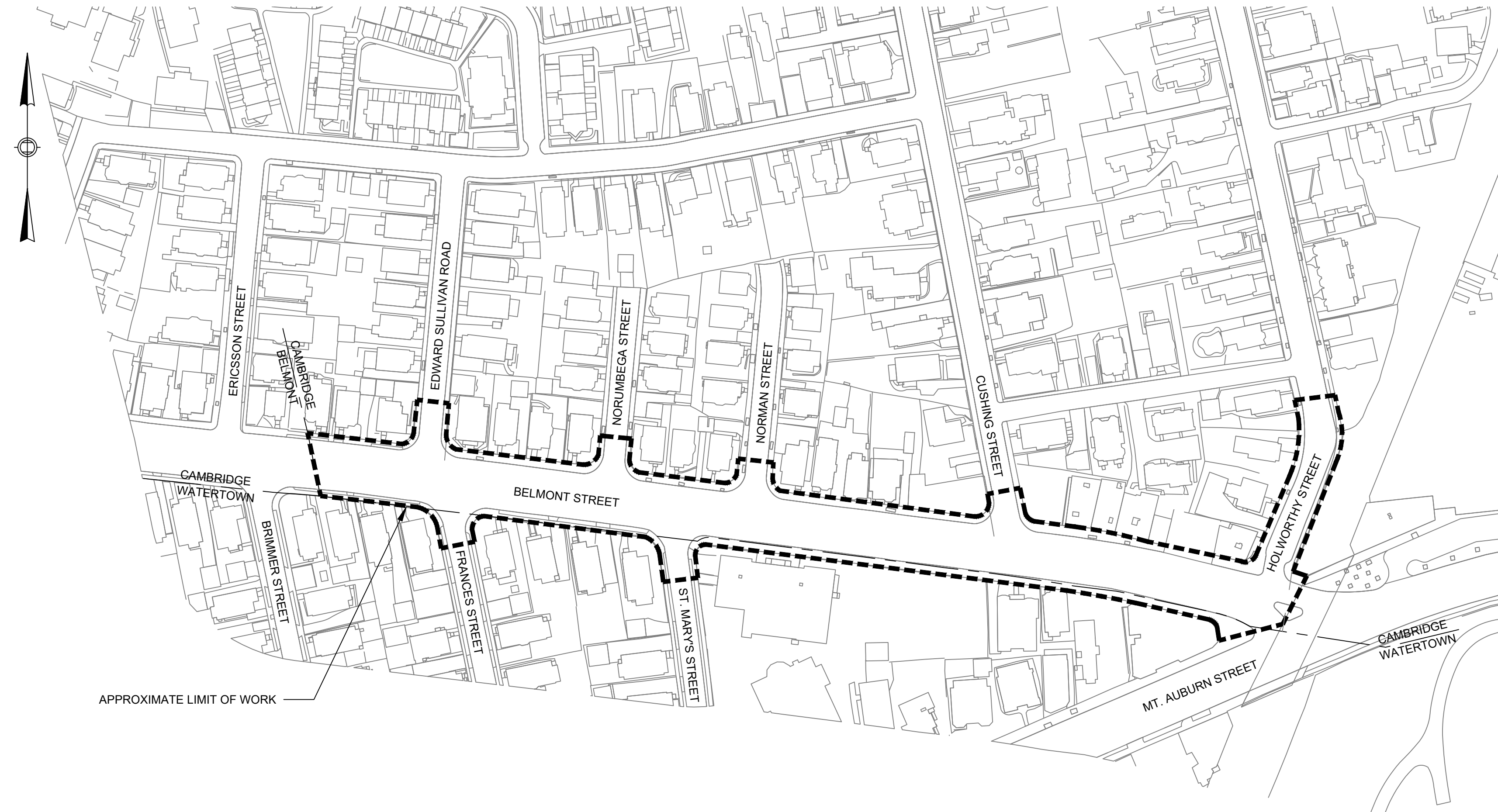


BELMONT & HOLWORTHY STREET SIDEWALK DESIGN PROJECT

PS&E SUBMISSION

INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION
G-1.0	TITLE SHEET & INDEX OF DRAWINGS
G-2.0	LEGEND, ABBREVIATIONS, GENERAL NOTES
G-3.0	CONSTRUCTION BASELINE PLAN
C-1.1	TYPICAL SECTIONS 1
C-1.2	TYPICAL SECTIONS 2
C-2.1	CIVIL DETAILS 1
C-2.2	CIVIL DETAILS 2
C-2.3	CIVIL DETAILS 3
C-2.4	CIVIL DETAILS 4
C-2.5	CIVIL DETAILS 5
C-3.1	CONSTRUCTION PLAN 1
C-3.2	CONSTRUCTION PLAN 2
C-3.3	CONSTRUCTION PLAN 3
C-3.4	CONSTRUCTION PLAN 4
C-4.1	CURB TIE AND ALIGNMENT PLAN 1
C-4.2	CURB TIE AND ALIGNMENT PLAN 2
C-4.3	CURB TIE AND ALIGNMENT PLAN 3
C-4.4	CURB TIE AND ALIGNMENT PLAN 4
C-5.1	GRADING PLAN 1
C-5.2	GRADING PLAN 2
C-5.3	GRADING PLAN 3
C-5.4	GRADING PLAN 4
C-6.0	PEDESTRIAN RAMP DETAILS
C-7.0	DRIVEWAY DETAILS
C-8.1	CIVIL UTILITY PLAN 1
C-8.2	CIVIL UTILITY PLAN 2
C-8.3	CIVIL UTILITY PLAN 3
C-8.4	CIVIL UTILITY PLAN 4
C-9.1	PAVEMENT MARKING AND SIGNAGE PLAN 1
C-9.2	PAVEMENT MARKING AND SIGNAGE PLAN 2
C-9.3	PAVEMENT MARKING AND SIGNAGE PLAN 3
C-9.4	PAVEMENT MARKING AND SIGNAGE PLAN 4
T-1.1	TRAFFIC SIGN SUMMARY 1
T-1.2	TRAFFIC SIGN SUMMARY 2
T-2.1	TRAFFIC SIGNAL PLAN 1
T-2.2	TRAFFIC SIGNAL PLAN 2
T-2.3	TRAFFIC SIGNAL PLAN 3
T-2.4	TRAFFIC SIGNAL PLAN 4



PREPARED FOR:
CITY OF CAMBRIDGE
 DEPARTMENT OF PUBLIC WORKS

MARCH 2022



PREPARED BY:
 HDR, INC.
 99 HIGH STREET, SUITE 2300
 BOSTON, MA 02110



GENERAL LEGEND

EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED

ABBREVIATIONS

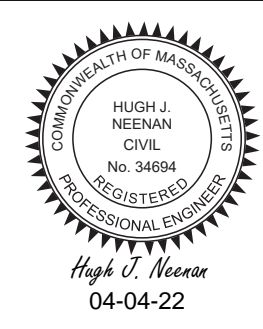
ABD	ABANDON	FP	FLANGE POST	SL	STOP LINE
ADJ	ADJUST	GALV	GALVANIZED	STL	STEEL
BC	BOTTOM OF CURB	GRAN	GRANITE	SW	SIDEWALK
BIT	BITUMINOUS CONCRETE	HYD	FIRE HYDRANT	SWEL	SOLID WHITE EDGE LINE
BO.	BY OTHERS	I=30.00	INVERT ELEVATION	SWG	SOLID WHITE GORE LINE
BT	BOTTOM PIPE ELEVATION	LP	LIGHT POLE	SWLL	SOLID WHITE LANE LINE
BWL	BROKEN WHITE LINE	MB	MAILBOX	TC	TOP OF CURB
CB	CATCH BASIN	MHD	MASSACHUSETTS HIGHWAY DEPARTMENT	TEL	TELEPHONE
CEM	CEMENT	NOM	NOMINAL	TH=60.00	TOP OF HOOD ELEVATION
CI	CAST IRON	NPV	NO PIPES VISIBLE	TP=50.00	TOP OF PIPE ELAVATION
CLF	CHAIN LINK FENCE	OC	ON CENTER	TYP	TYPICAL
CNO	COULD NOT OPEN (MANHOLE OR CATCH BASIN)	PAV	PAVEMENT	UP	UTILITY POLE
CONC	CONCRETE	PED	PEDESTRIAN	VC	VITRIFIED CLAY
CP	CATENARY POLE	PLT	PLANTER	VGC	VERTICAL GRANITE CURB
CSTN	COBBLESTONE	PM	PARKING METER	YL	YIELD LINE
CW	CROSSWALK	PSI	POUNDS PER SQUARE INCH	W	WATER
DHL	DRILLHOLE	PVC	POLYVINYLCHORIDE	WIF	WROUGHT IRON FENCE
DI	DUCTILE IRON	R=50.00	RIM ELEVATION	WDF	WOOD FENCE
DIA	DIAMETER	R&D	REMOVE AND DISPOSE		
DICB	DIRECT INLET CATCH BASIN	R&R	REMOVE AND RESET		
DIP	DUCTILE IRON PIPE	R&S	REMOVE AND SALVAGE		
DMH	DRAIN MANHOLE	REC	RECORD (NOT FOUND IN FIELD)		
DBYL	DOUBLE YELLOW LINE	REF	REFERENCE		
EXIST	EXISTING	RET	RETAIN		
FOD	FULL OF DEBRIS (MANHOLE OR CATCH BASIN)	REM	REMOVE		
FOHW	FULL OF WATER (MANHOLE OR CATCH BASIN)	RRFB	RECTANGULAR RAPID FLASHING BEACON		

GENERAL NOTES

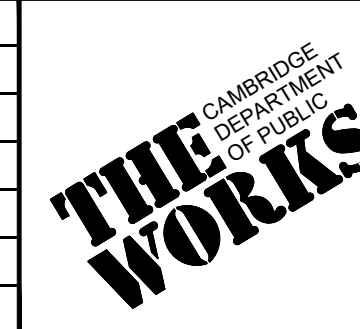
- EXISTING TOPOGRAPHIC AND SITE UTILITY INFORMATION IS BASED ON THE FOLLOWING SOURCES:
 - THE GROUND FIELD SURVEY WAS CONDUCTED BY SURVEYING AND MAPPING CONSULTANTS ON BELMONT STREET ON THE DATE OF MARCH 3, 2017.
 - THE HORIZONTAL DATUM SHOWN HEREON REFERENCES THE NORTH AMERICAN DATUM OF 1983, NAD83/2011 (EPOCH 2010.00), AS DERIVED FROM A POST PROCESSING SOLUTION FROM THE TRIMBLE BUSINESS CENTER RTX ADJUSTMENT USING THE PUBLISHED VALUE OF KeyNetGPS STATIONS CP01, NHUN, KP16 AND KP19.
 - THE VERTICAL DATUM SHOWN HEREON ARE REFERENCED TO THE CITY OF CAMBRIDGE VERTICAL DATUM BASED ON A CONVERSION FROM NAVD88 USING THE PUBLISHED DIFFERENCE OF 11.66'.
- CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.
- ALL UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL EXISTING UTILITIES, AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.
- RIGHT-OF-WAY AND PROPERTY LINES SHOULD BE CONSIDERED APPROXIMATE IN LOCATION.
- THE CONTRACTOR SHALL NOTIFY, IN WRITING, ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO EXCAVATION WORK AND CALL "DIG-SAFE" AT 1-800-322-4844, PRIOR TO COMMENCING WORK.
- ALL FEES AND PERMITS SHALL BE PAID FOR BY THE CONTRACTOR.
- THE CONTRACTOR SHALL SECURE THE WORK AREA AT THE END OF EACH WORK DAY.
- CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION ANY AREAS ADJACENT TO AND OUTSIDE THE LIMIT OF WORK WHICH ARE DISTURBED DURING CONSTRUCTION, AT THE CONTRACTOR'S OWN EXPENSE.
- UTILITY SERVICES SHALL BE MAINTAINED AT ALL TIMES.
- CONTRACTOR SHALL SAWCUT ALL EDGES OF PAVING WHERE PAVEMENT IS TO BE REMOVED AND WHERE A NEW PAVEMENT IS TO ABUT EXISTING PAVEMENT.
- CONTRACTOR SHALL PROVIDE EXPANSION JOINTS IN CONCRETE WALKS WHERE WALKS ABUT BUILDING WALLS, AND WHERE NEW WALKS ABUT EXISTING WALKS.
- CONTRACTOR SHALL PROVIDE UNIFORM SLOPE BETWEEN SPOT GRADES AND CONTOURS.
- CONTRACTOR SHALL ADJUST ALL EXISTING CITY OWNED UTILITY CASTINGS WITHIN LIMIT OF WORK TO LINE AND GRADE, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL COORDINATE THE ADJUSTMENT OF ALL OTHER PRIVATELY OWNED UTILITIES AND SHALL PROVIDE AT MINIMUM A ONE WEEK NOTICE OF WORK COMMENCING IN THE AREAS REQUIRING ADJUSTMENT.
- CONTRACTOR SHALL PROVIDE A STAKED LAYOUT ON SITE FOR ENGINEER'S REVIEW PRIOR TO COMMENCING WORK.
- LABELED DIMENSIONS SUPERSEDE SCALED DIMENSIONS FOR ALL LAYOUT WORK.
- AT ALL LOCATIONS, STATION AND OFFSETS ARE GIVEN TO REVEAL SIDE OF CURB OR EDGE OF PAVEMENT AS APPROPRIATE. IN THE CASE OF FLUSH CURB, STATION AND OFFSETS ARE GIVEN TO THE "UP STATION" EDGE OF CURB.
- ALL LINES ARE PARALLEL OR PERPENDICULAR UNLESS OTHERWISE INDICATED.
- THE LIMIT OF WORK SHALL BE AT THE PROPERTY LINES UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- "DON'T DUMP" PLACARDS SHALL BE INSTALLED AT ALL EXISTING AND PROPOSED CATCH BASINS WHICH ARE ADJACENT TO SIDEWALKS RECONSTRUCTED UNDER THIS CONTRACT. PLACARDS WILL BE FURNISHED BY THE CITY AT NO COST TO THE CONTRACTOR.
- ALL SITE FEATURES WHICH ARE TO BE DISPOSED OF, INCLUDING EXISTING PAVEMENT, SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS. DISPOSAL COSTS SHALL BE INCIDENTAL TO THE VARIOUS CONTRACT ITEMS WITH NO ADDITIONAL PAYMENT PROVIDED.
- ALL LENGTHS AND QUANTITIES SHOWN ON THE PLANS ARE FOR REFERENCE PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES FOR BIDDING PURPOSES.
- WORK WITHIN PROJECT LIMITS SHALL MEET THE REQUIREMENTS OF THE CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS.
- ALL PROPOSED WORK SHALL BE COMPLETED WITHIN THE EXISTING RIGHT OF WAY LIMITS AND BACK OF EXISTING SIDEWALK UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER.
- WHEN WORKING WITHIN OR DIRECTLY ADJACENT TO EXISTING ROADWAYS, CITY OF CAMBRIDGE POLICE OFFICERS MUST BE PRESENT TO DIRECT TRAFFIC AWAY FROM WORK ZONES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING, FOR REVIEW AND APPROVAL BY THE ENGINEER, DETAILED PLANS SHOWING THE MAINTENANCE OF TRAFFIC DURING CONSTRUCTION IN EXISTING ROADWAYS, USING REFLECTORIZED DRUMS, TEMPORARY CONCRETE BARRIERS, ARROW PANELS, VARIABLE MESSAGE SIGNS, AND TEMPORARY SIGNAGE AND MARKINGS. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE DESIGNED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). THE CONTRACTOR SHALL COORDINATE THE MAINTENANCE OF TRAFFIC OPERATIONS WITH THE CAMBRIDGE TRAFFIC, PARKING & TRANSPORTATION DEPARTMENT, AND WITH ANY ADJACENT CONSTRUCTION PROJECTS.

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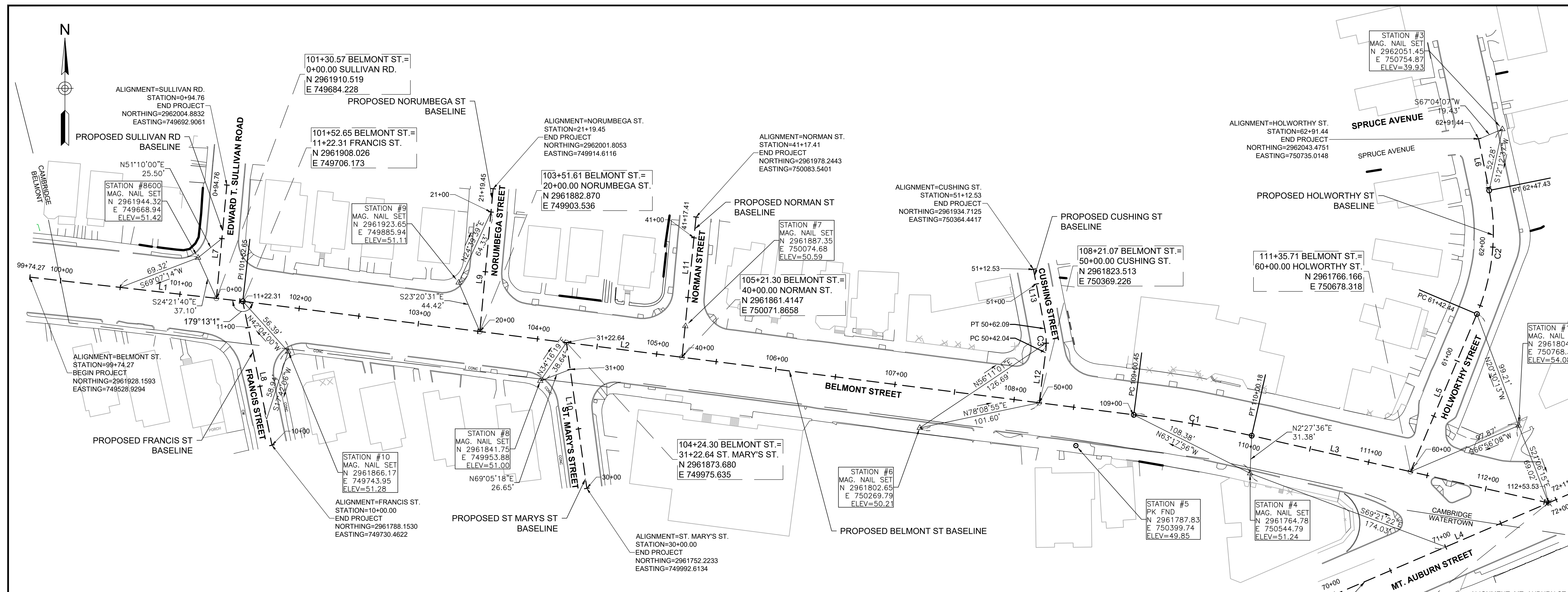
HDR ENGINEERING, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MASSACHUSETTS 02110-2378
(617) 357-7700



Scale	AS NOTED		
Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		REVISIONS



Client	CITY OF CAMBRIDGE, MA	Sheet	G-2.0
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	LEGEND, ABBREVIATIONS, GENERAL NOTES		

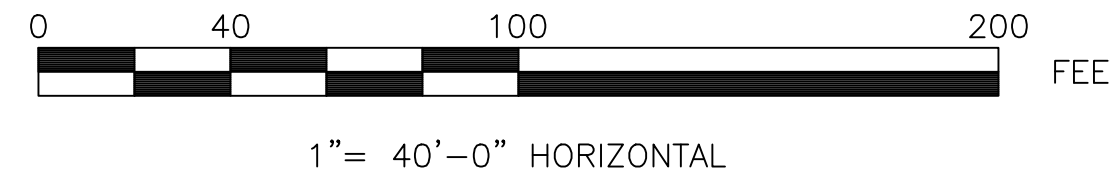


LINE SEGMENT DATA TABLE

SEGMENT	STREET NAME	BEGINNING STATION	START NORTHING	START EASTING	END STATION	END NORTHING	END EASTING	LENGTH	BEARING
L1	Belmont St.	99+74.27	2961928.1593	749528.9294	101+52.65	2961908.0257	749706.1729	178.38'	S83° 31' 09.73"E
L2	Belmont St.	101+52.65	2961908.0257	749706.1729	109+00.45	2961813.4774	750447.9639	747.80'	S82° 44' 10.60"E
L3	Belmont St.	110+00.18	2961796.1339	750546.1351	112+53.53	2961740.1160	750793.2186	253.35'	S77° 13' 33.80"E
L12	Cushing St.	50+00.00	2961823.5132	750369.2264	50+42.04	2961865.2139	750374.5416	42.04'	N07° 15' 49.40"E
L13	Cushing St.	50+62.09	2961885.1760	750373.9198	51+12.53	2961934.7125	750364.4417	50.44'	N10° 49' 54.68"W
L8	Francis St.	10+00.00	2961788.1530	749730.4622	11+22.31	2961908.0257	749706.1729	122.31'	N11° 27' 16.28"W
L5	Holworthy St.	60+00.00	2961766.1659	750678.3177	61+42.44	2961897.4321	750733.6167	142.44'	N22° 50' 39.98"E
L6	Holworthy St.	62+47.43	2962000.3515	750743.8119	62+91.44	2962043.4751	750735.0148	44.01'	N11° 31' 47.91"W
L4	Mt. Auburn St.	70+00.00	2961664.0079	750615.7424	72+11.92	2961747.5301	750810.5073	211.92'	N66° 47' 19.03"E
L11	Norman St.	40+00.00	2961861.4147	750071.8658	41+17.41	2961978.2443	750083.5401	117.41'	N05° 42' 22.96"E
L9	Norumbega St.	20+00.00	2961882.8698	749903.5363	21+19.45	2962001.8053	749914.6116	119.45'	N05° 19' 12.27"E
L10	St. Mary's St.	30+00.00	2961752.2233	749992.6134	31+22.64	2961873.6802	749975.6347	122.64'	N07° 57' 28.55"W
L7	Sullivan Rd.	0+00.00	2961910.5185	749684.2276	0+94.76	2962004.8832	749692.9061	94.76'	N05° 15' 16.34"E

CURVE DATA TABLE

CURVE NO.	STREET NAME	PC STATION	PC NORTHING	PC EASTING	PT STATION	PT NORTHING	PT EASTING	CURVE LENGTH CHORD LENGTH	DELTA RADIUS
C1	Belmont St.	109+00.45	2961813.4774	750447.9639	110+00.18	2961796.1339	750546.1351	L=99.73' C=99.69'	Δ=005°31' R=1037.00'
C3	Cushing St.	50+42.04	2961865.2139	750374.5416	50+62.09	2961885.1760	750373.9198	L=20.05' C=19.97'	Δ=018°06' R=63.50'
C2	Holworthy St.	61+42.44	2961897.4321	750733.6167	62+47.43	2962000.3515	750743.8119	L=104.99' C=103.42'	Δ=034°22' R=175.00'



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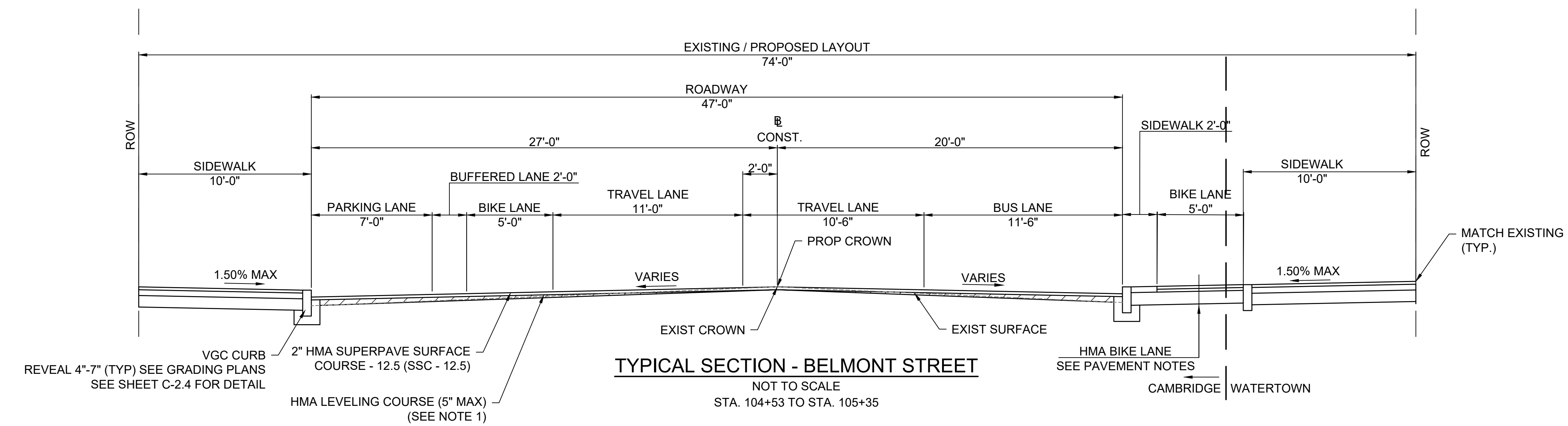
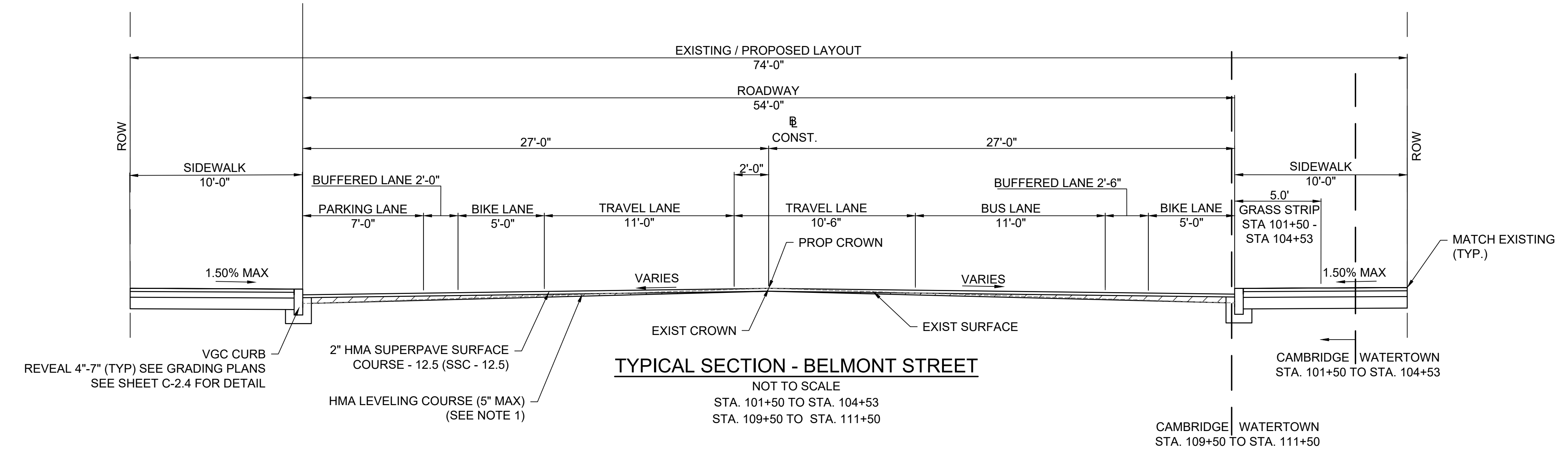
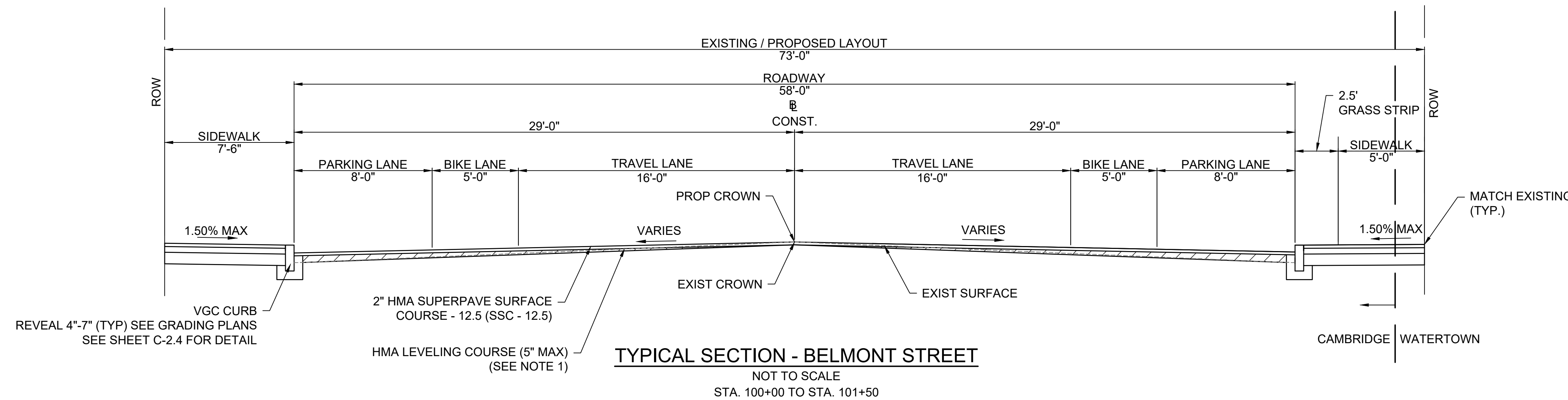
HDR ENGINEERING, INC.
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BOSTON, MASSACHUSETTS 02110-2378
(617) 357-7700

Scale	AS NOTED		
Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		Date
			REVISIONS



Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	CONSTRUCTION BASELINE PLAN

Sheet	G-3.0
File No.	



PAVEMENT NOTES

PROPOSED PAVEMENT MILLING AND HMA OVERLAY

MILLING: PAVEMENT MILLING VARIABLE DEPTH (2"-4") TO MEET PROPOSED GRADING. MULTIPLE PASSES WITH THE PAVEMENT MILLING MACHINE TO REMOVE EXISTING PAVEMENT AS SHOWN ON THE PLANS AND TO PROVIDE A STABLE SURFACE FOR PAVING OVERLAY SHALL BE INCIDENTAL TO PAVEMENT MILLING COST PER SQUARE YARD.

SURFACE: 2" HMA SUPERPAVE SURFACE COURSE 12.5 (SSC - 12.5) OVER VARIABLE DEPTH LEVELING COURSE AS REQUIRED.

TACKCOAT: EMULSIFIED ASPHALT TACK COAT GRADE RS-1 PLACED AT A RESIDUAL RATE OF 0.07 GALLONS PER SQUARE YARD OVER MILLED SURFACES; 0.05 GALLONS PER SQUARE YARD OVER SMOOTH PAVEMENT

NOTE:

- PAVEMENT MILLING VARIABLE DEPTH (2"-4") TO MEET PROPOSED GRADING. MILL (2" NOMINAL) OR SHIM (5" MAX) TO ESTABLISH PROPOSED GRADES. PAVEMENT MILLING DEPTHS MAY VARY (SEE GRADING PLANS FOR PROPOSED FINISHED GRADE ELEVATIONS)

PROPOSED CEMENT CONCRETE SIDEWALK

SURFACE: 4" CEMENT CONCRETE, 4000 PSI, POLYPROPYLENE MICROFIBER REINFORCED

SUBBASE: 8" GRAVEL BORROW, TYPE B

PROPOSED CEMENT CONCRETE SIDEWALK AT DRIVEWAYS AND CURB RAMPS

SURFACE: 6" CEMENT CONCRETE, 4000 PSI, POLYPROPYLENE MICROFIBER REINFORCED

SUBBASE: 8" GRAVEL BORROW, TYPE B

PROPOSED HMA BIKE LANE

SURFACE: 2" HMA SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER 2.5" HMA SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)

SUBBASE: 8" GRAVEL BORROW TYPE B OVER COMPACTED SUBGRADE

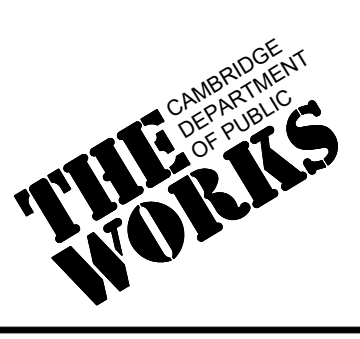
TACKCOAT: EMULSIFIED ASPHALT TACK COAT GRADE RS-1 PLACED AT A RESIDUAL RATE OF 0.07 GALLONS PER SQUARE YARD OVER MILLED SURFACES; 0.05 GALLONS PER SQUARE YARD OVER SMOOTH PAVEMENT

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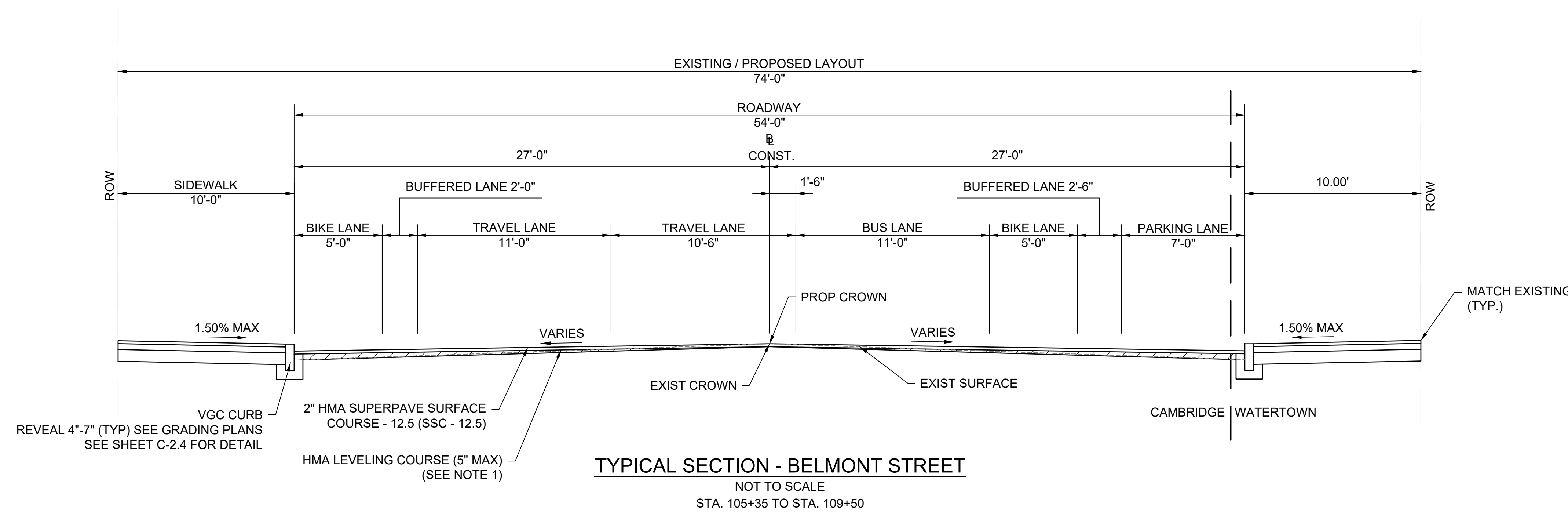
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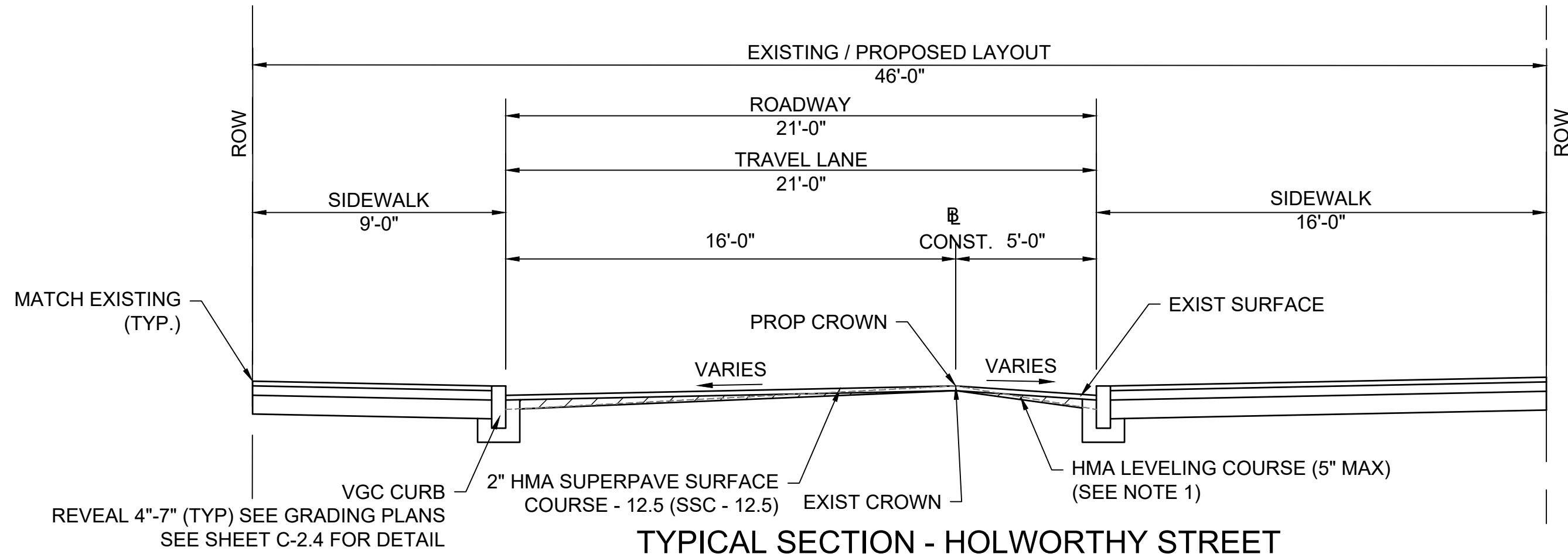
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Date	MARCH 2022			
Job No.				
Designed by	JCD			
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Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	



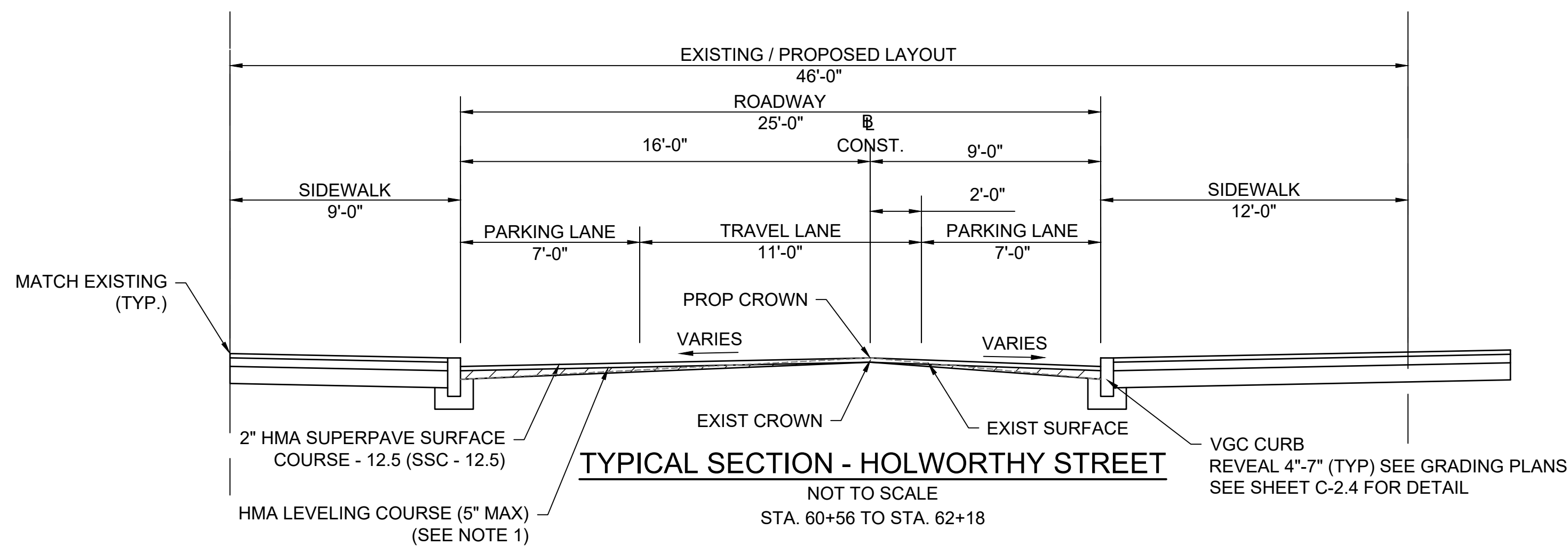
Client	CITY OF CAMBRIDGE, MA	Sheet	C-1.1
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	TYPICAL SECTIONS 1		



TYPICAL SECTION - BELMONT STREET
NOT TO SCALE
STA. 105+35 TO STA. 109+50



TYPICAL SECTION - HOLWORTHY STREET
NOT TO SCALE
STA. 60+24 TO STA. 60+56



TYPICAL SECTION - HOLWORTHY STREET
NOT TO SCALE
STA. 60+56 TO STA. 62+18

PAVEMENT NOTES

- PROPOSED PAVEMENT MILLING AND HMA OVERLAY**
- MILLING:** PAVEMENT MILLING VARIABLE DEPTH (2"-4") TO MEET PROPOSED GRADING. MULTIPLE PASSES WITH THE PAVEMENT MILLING MACHINE TO REMOVE EXISTING PAVEMENT AS SHOWN ON THE PLANS AND TO PROVIDE A STABLE SURFACE FOR PAVING OVERLAY SHALL BE INCIDENTAL TO PAVEMENT MILLING COST PER SQUARE YARD.
- SURFACE:** 2" HMA SUPERPAVE SURFACE COURSE 12.5 (SSC - 12.5) OVER VARIABLE DEPTH LEVELING COURSE AS REQUIRED.
- TACKCOAT:** EMULSIFIED ASPHALT TACK COAT GRADE RS-1 PLACED AT A RESIDUAL RATE OF 0.07 GALLONS PER SQUARE YARD OVER MILLED SURFACES; 0.05 GALLONS PER SQUARE YARD OVER SMOOTH PAVEMENT
- NOTE:**
1. PAVEMENT MILLING VARIABLE DEPTH (2"-4") TO MEET PROPOSED GRADING. MILL (2" NOMINAL) OR SHIM (5" MAX) TO ESTABLISH PROPOSED GRADES. PAVEMENT MILLING DEPTHS MAY VARY (SEE GRADING PLANS FOR PROPOSED FINISHED GRADE ELEVATIONS)

- PROPOSED CEMENT CONCRETE SIDEWALK**
- SURFACE:** 4" CEMENT CONCRETE, 4000 PSI, POLYPROPYLENE MICROFIBER REINFORCED
- SUBBASE:** 8" GRAVEL BORROW, TYPE B

- PROPOSED CEMENT CONCRETE SIDEWALK AT DRIVEWAYS AND CURB RAMPS**
- SURFACE:** 6" CEMENT CONCRETE, 4000 PSI, POLYPROPYLENE MICROFIBER REINFORCED
- SUBBASE:** 8" GRAVEL BORROW, TYPE B

- PROPOSED HMA BIKE LANE**
- SURFACE:** 2" HMA SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER 2.5" HMA SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)
- SUBBASE:** 8" GRAVEL BORROW TYPE B OVER COMPACTED SUBGRADE
- TACKCOAT:** EMULSIFIED ASPHALT TACK COAT GRADE RS-1 PLACED AT A RESIDUAL RATE OF 0.07 GALLONS PER SQUARE YARD OVER MILLED SURFACES; 0.05 GALLONS PER SQUARE YARD OVER SMOOTH PAVEMENT

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(617) 357-7700

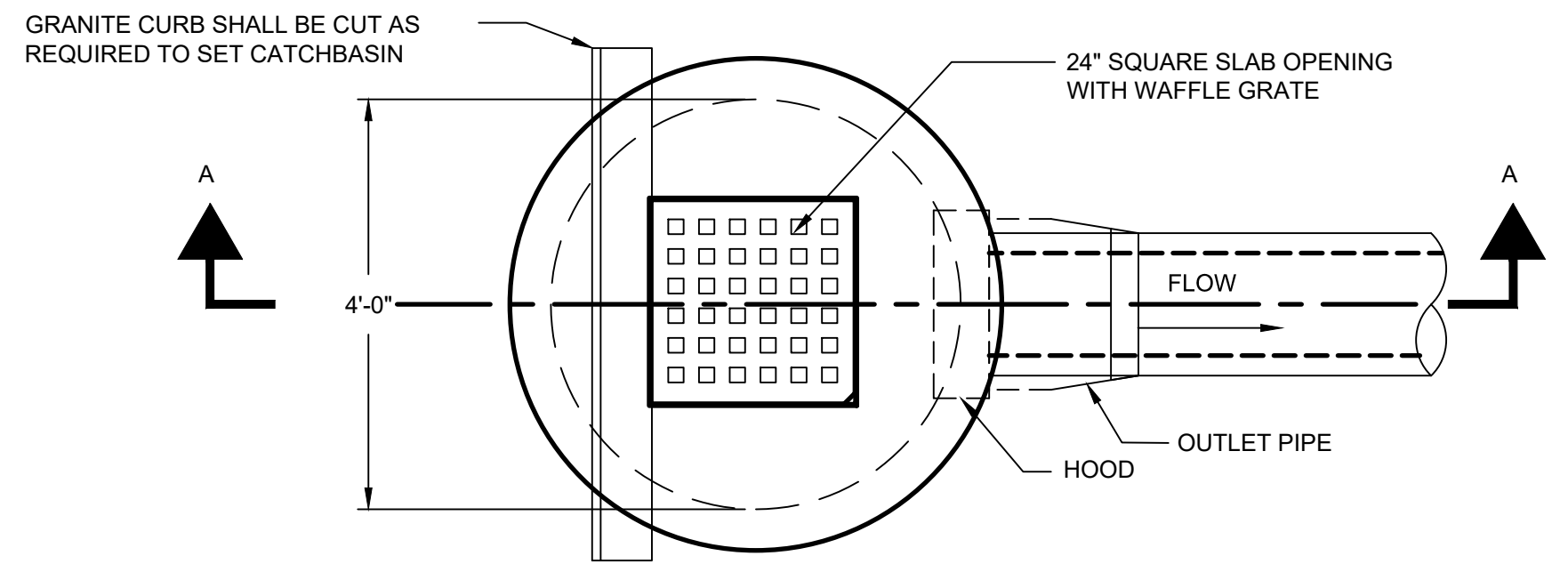


Scale	AS NOTED
Date	MARCH 2022
Job No.	
Designed by	JCD
Drawn by	JCD
Checked by	HJN
Approved by	HJN

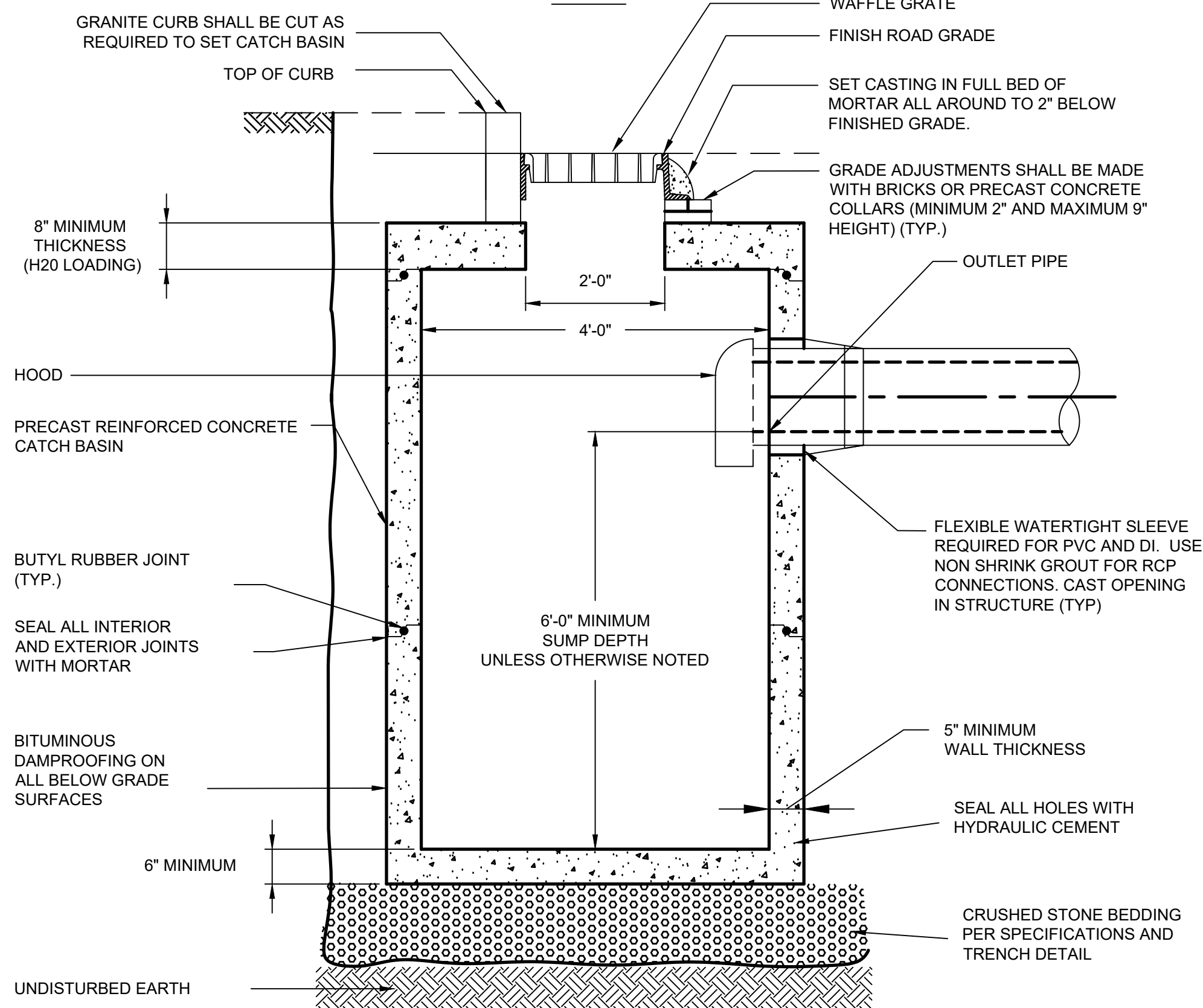
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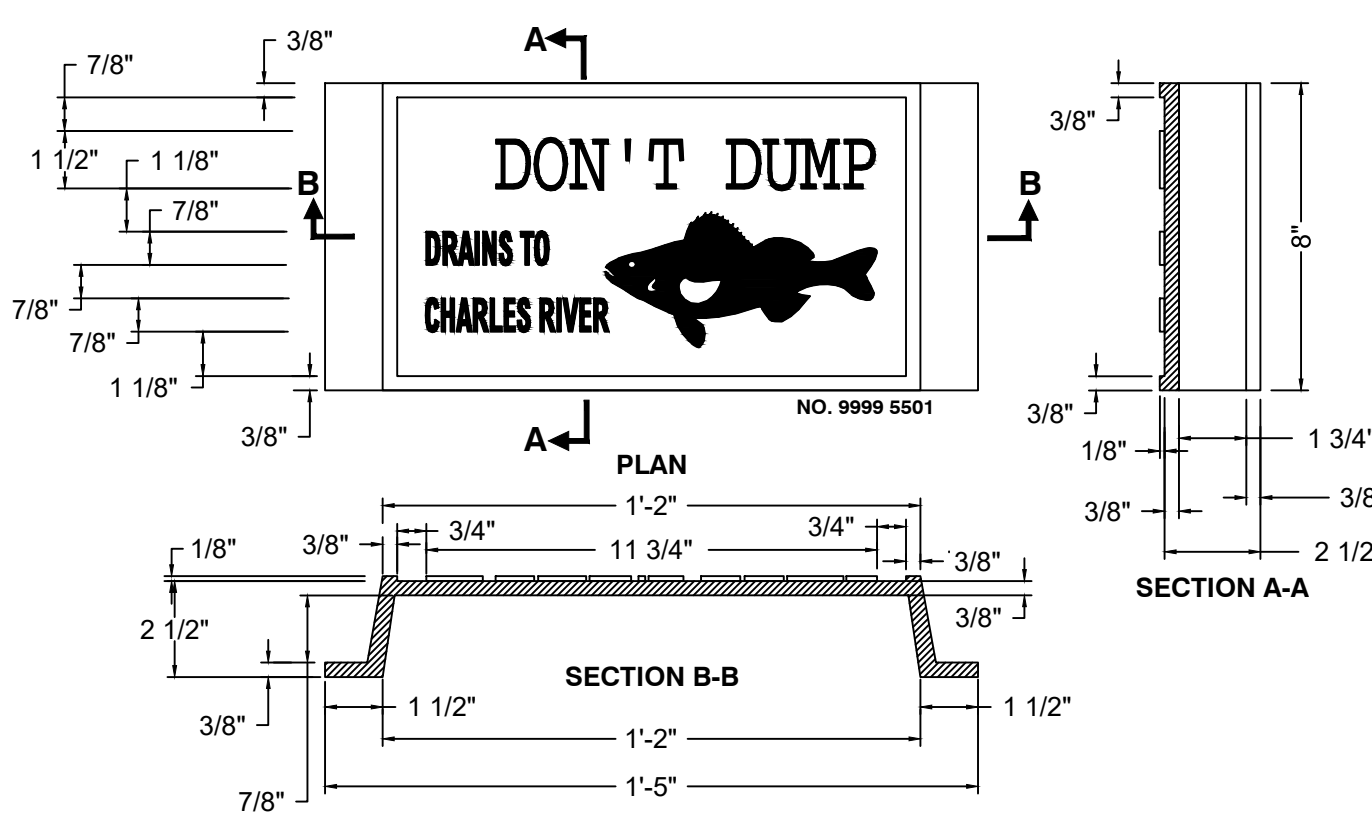
Client	CITY OF CAMBRIDGE, MA	Sheet	C-1.2
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	TYPICAL SECTIONS 2		



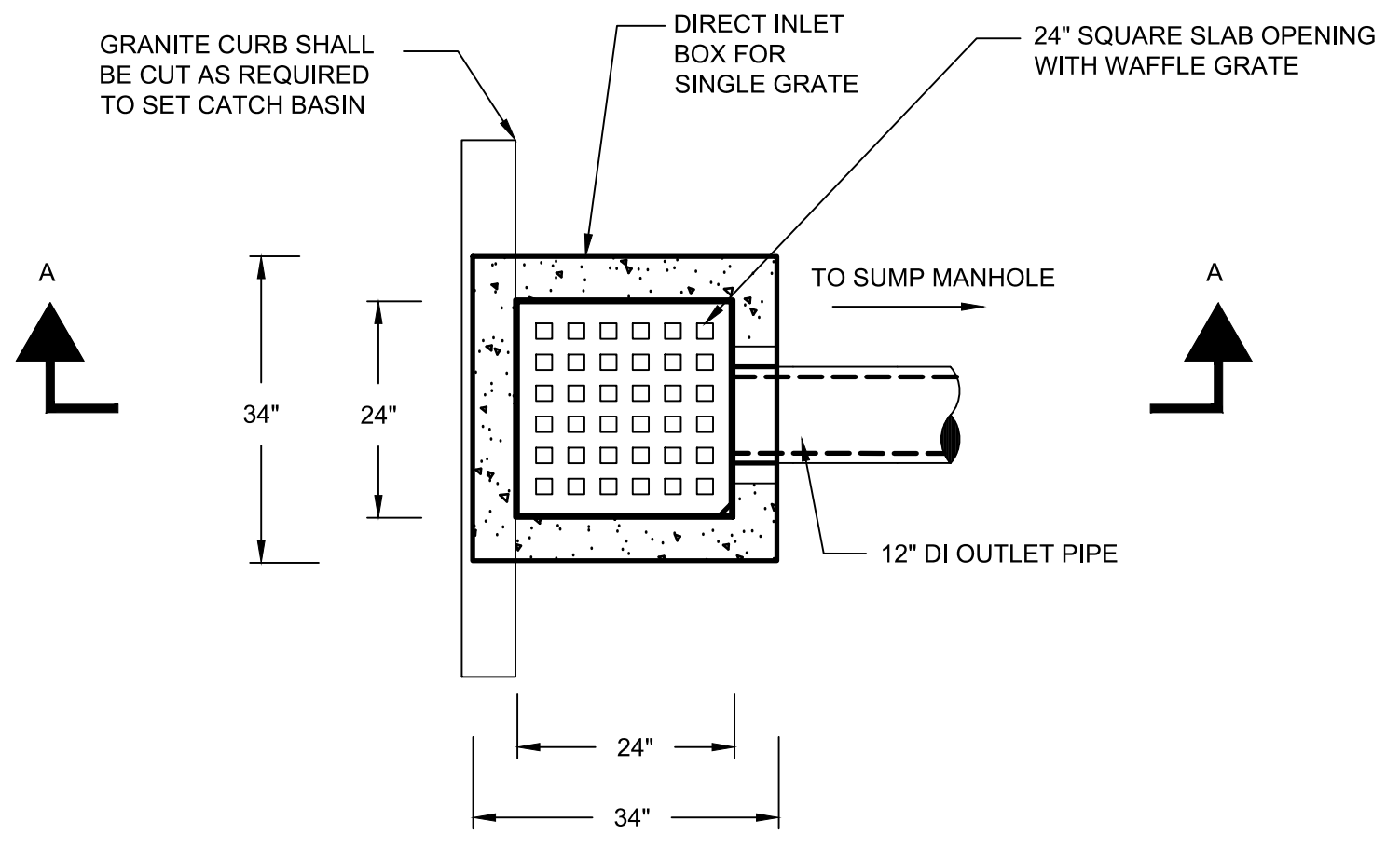
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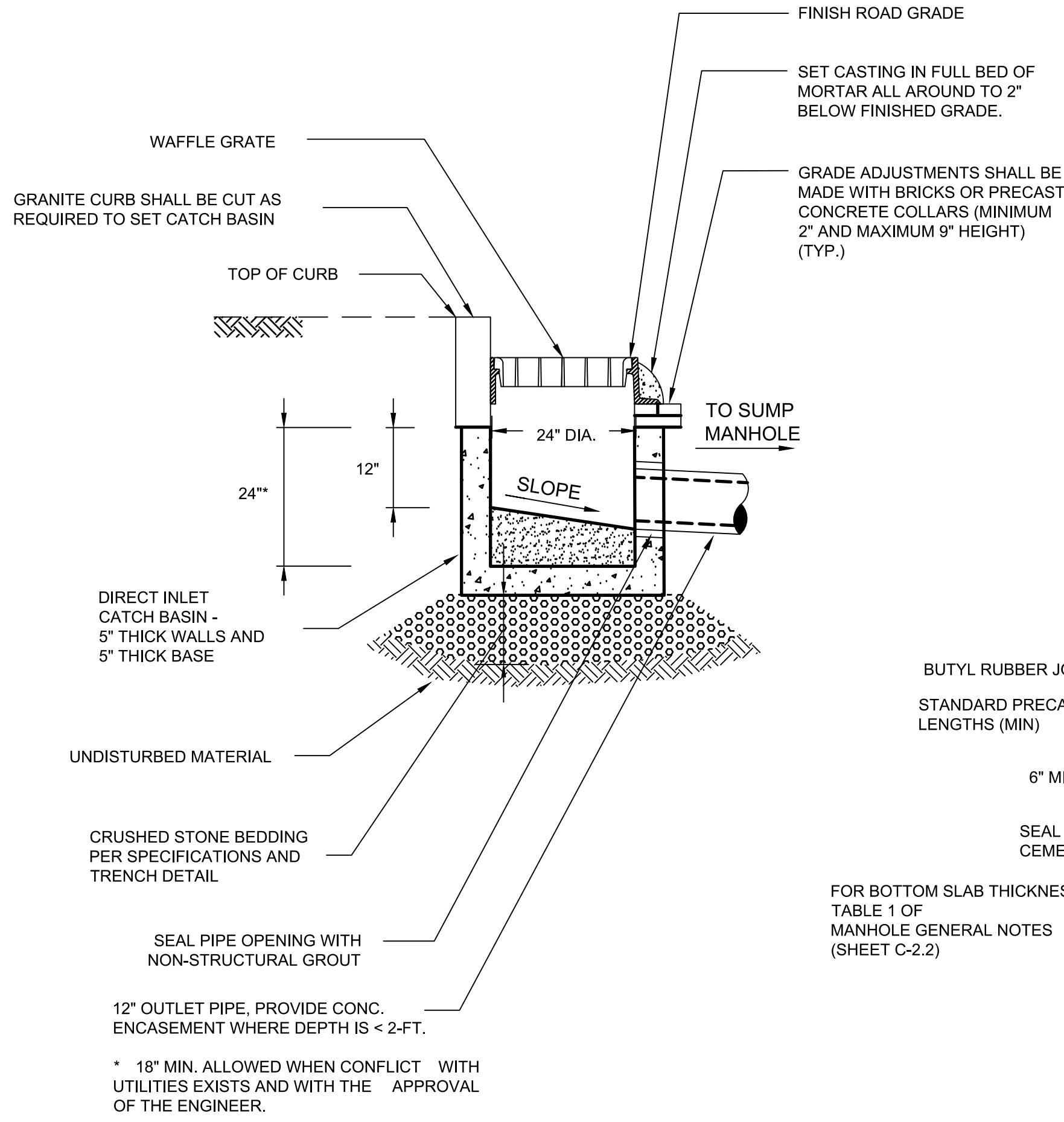
SECTION A-A
SINGLE GRATE CATCH BASIN
NTS



"DON'T DUMP" CATCH BASIN SIDEWALK MARKER*
NTS

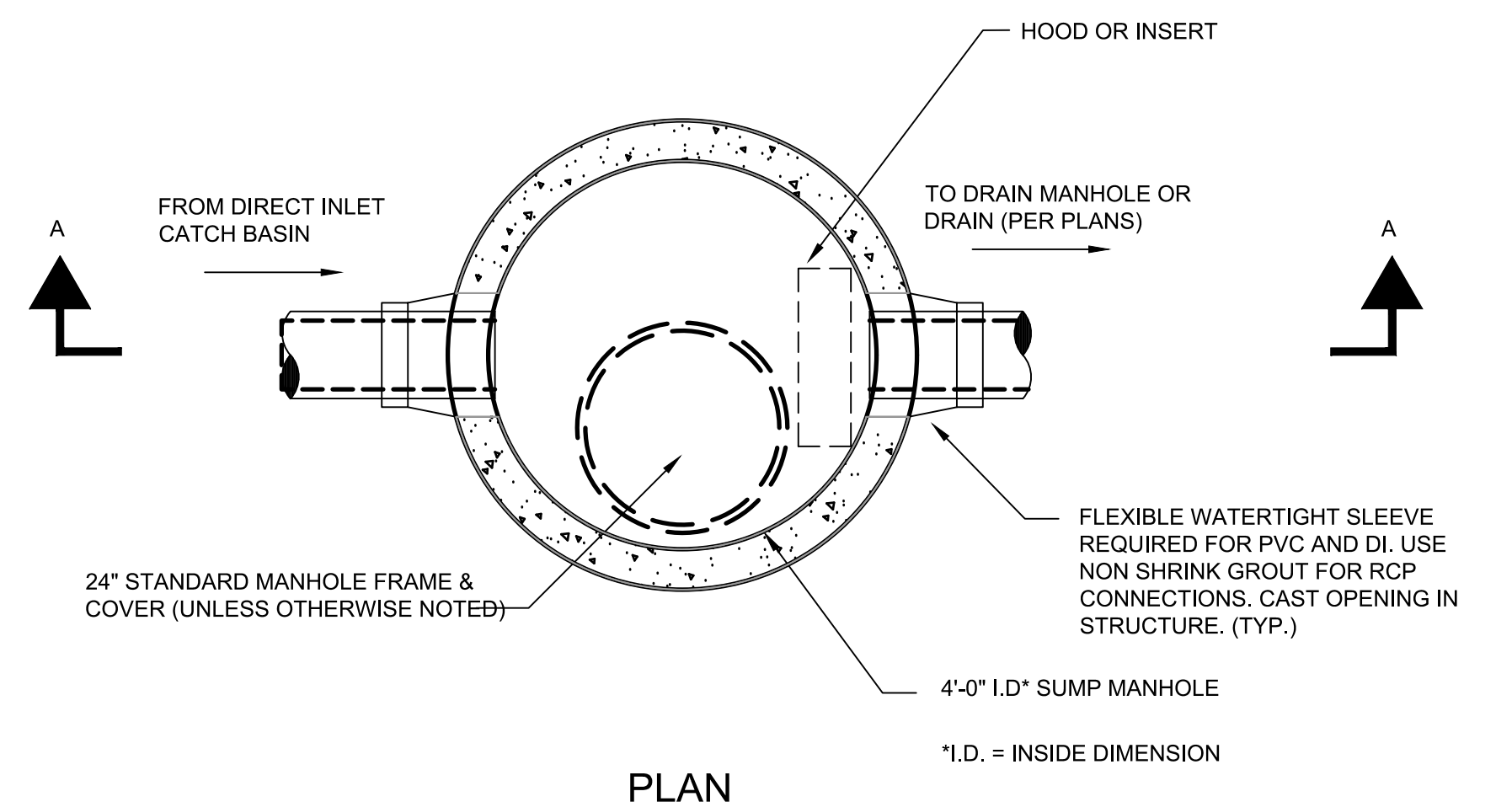


PLAN

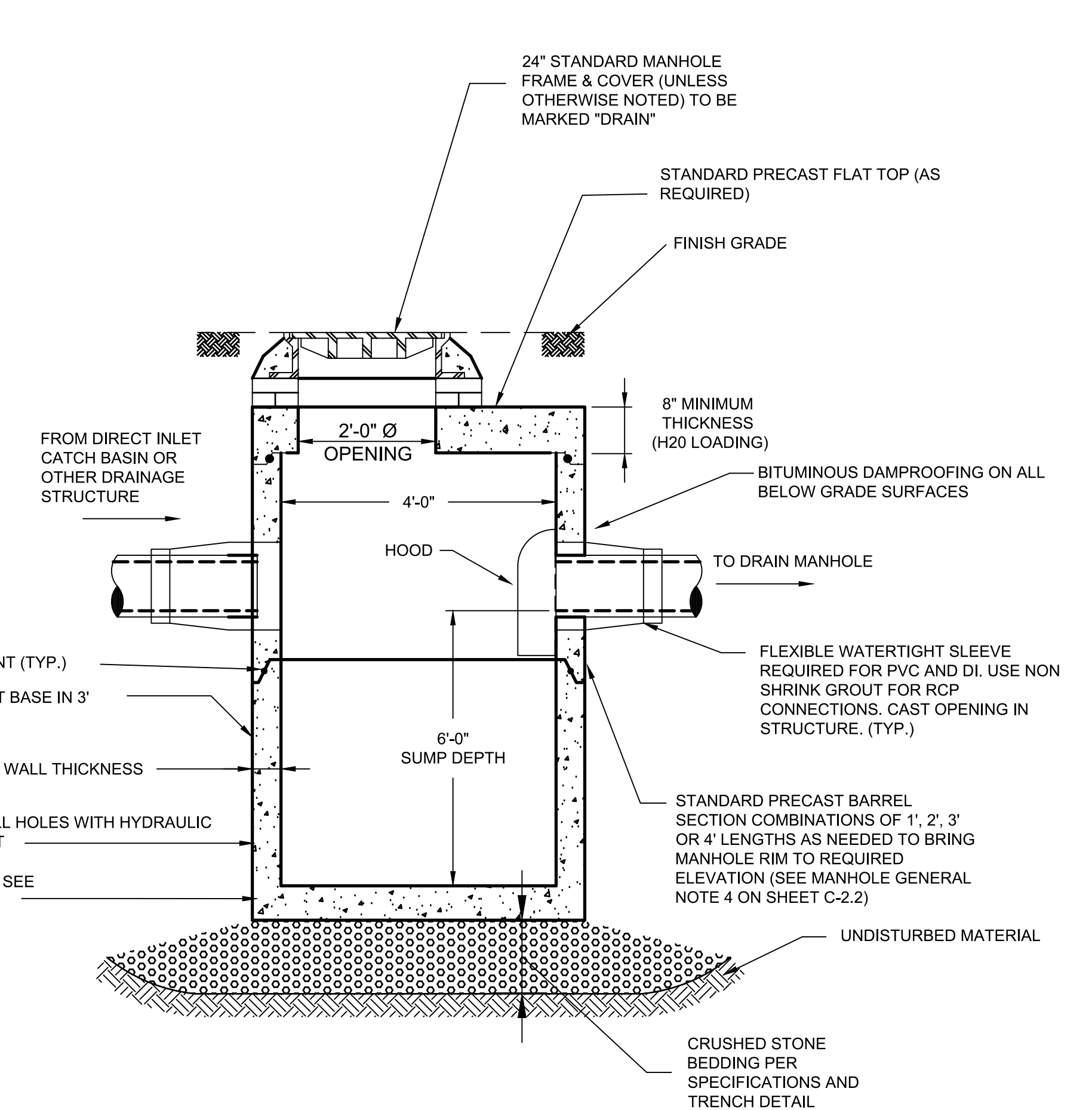


SECTION A-A

DIRECT INLET CATCH BASIN
NTS



PLAN



SECTION A-A

DRAIN MANHOLE DETAIL - 6 FOOT SUMP
NTS

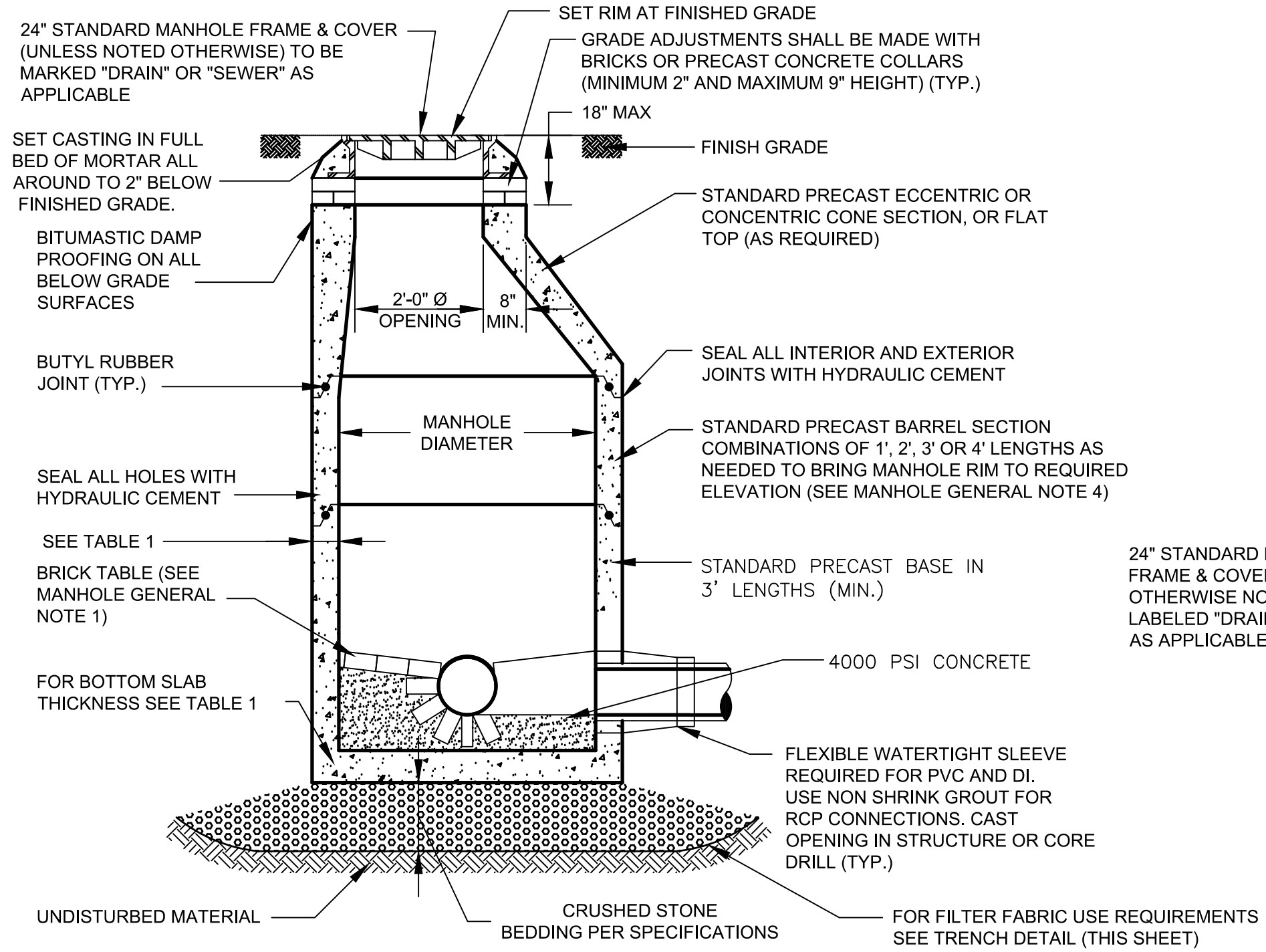
GENERAL NOTES FOR CATCH BASINS:
 1. FACE OF PIPE SHALL NOT PROJECT MORE THAN 4-INCHES FROM FACE OF WALL ALONG CENTERLINE OF PIPE.
 2. FOR DESCRIPTION OF MATERIALS AND CONSTRUCTION METHOD, SEE SPECIFICATIONS.
 3. DESIGN PRECAST SECTIONS WITH FRAME AND GRATE FOR AASHTO H20 LOADING.
 4. GRATE OPENING CAN BE CENTERED OR OFFSET PERPENDICULAR TO THE CURB.
 5. FOR CATCH BASINS INSTALLED ABUTTING GRANITE CURBS, USE 3-FLANGED FRAMES.
 6. "DON'T DUMP" SIDEWALK MARKERS FURNISHED BY THE CITY SHALL BE INSTALLED ADJACENT TO ALL CATCH BASINS AND INLETS IN THE PROJECT AREA.

12" OUTLET PIPE, PROVIDE CONC. ENCASEMENT WHERE DEPTH IS < 2-FT.
 * 18" MIN. ALLOWED WHEN CONFLICT WITH UTILITIES EXISTS AND WITH THE APPROVAL OF THE ENGINEER.

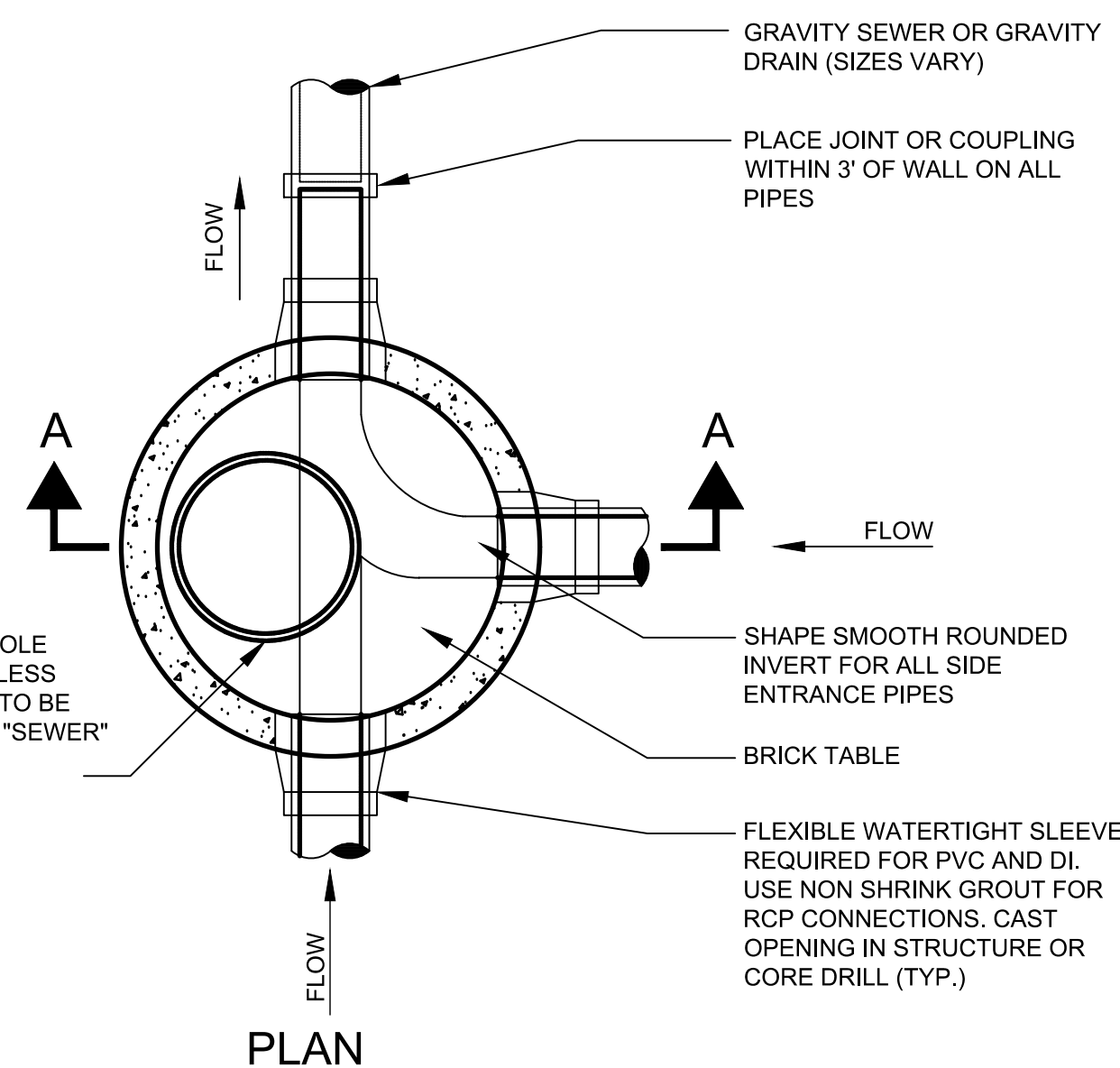
FOR BOTTOM SLAB THICKNESS SEE TABLE 1 OF MANHOLE GENERAL NOTES (SHEET C-2.2)

Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	

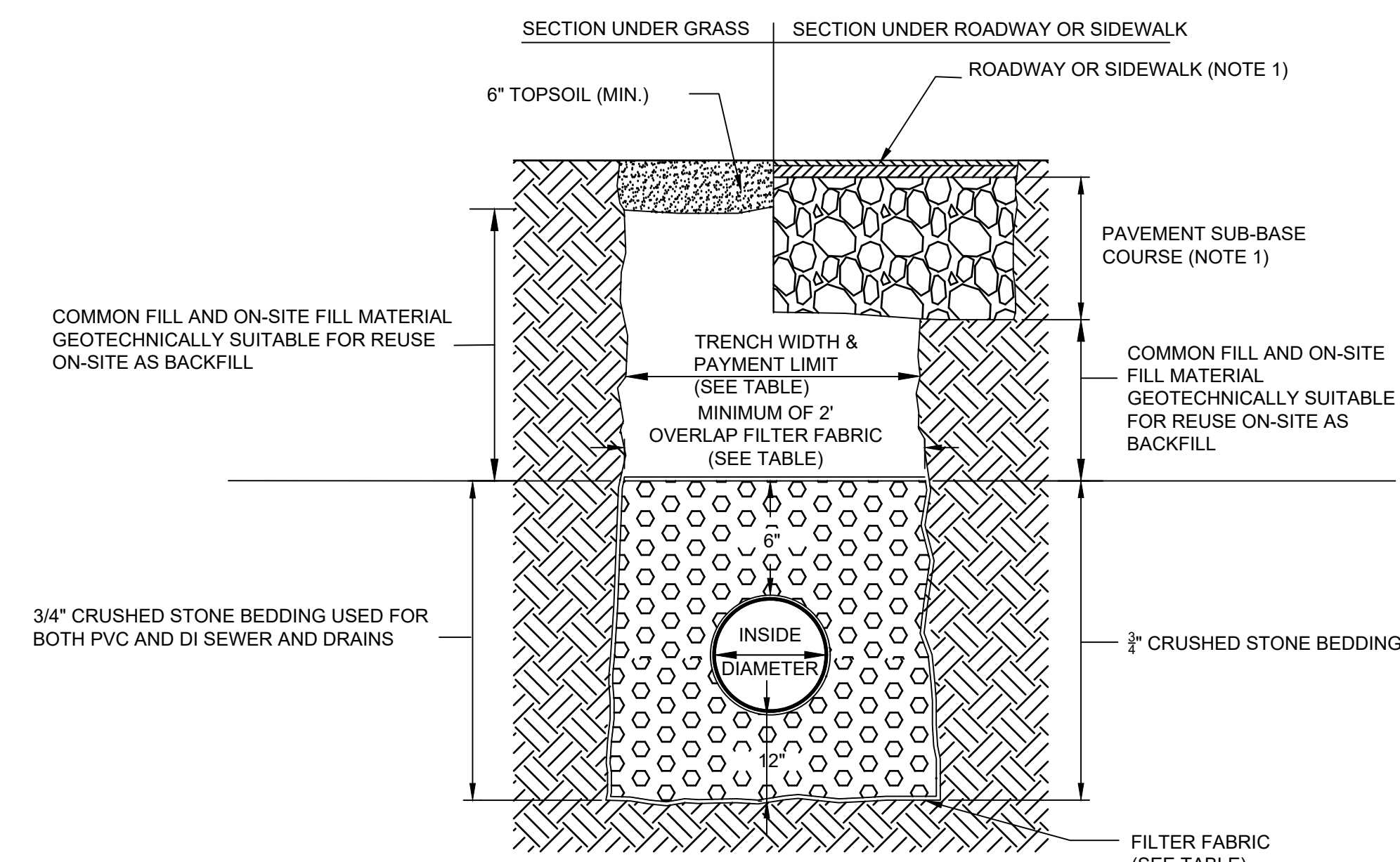
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SECTION A-A
DRAIN MANHOLE DETAIL
NTS



PLAN



TRENCH DETAIL FOR SEWER, DRAIN AND WATER PIPE
NTS

TRENCH PAY LIMIT TABLE FOR PIPES

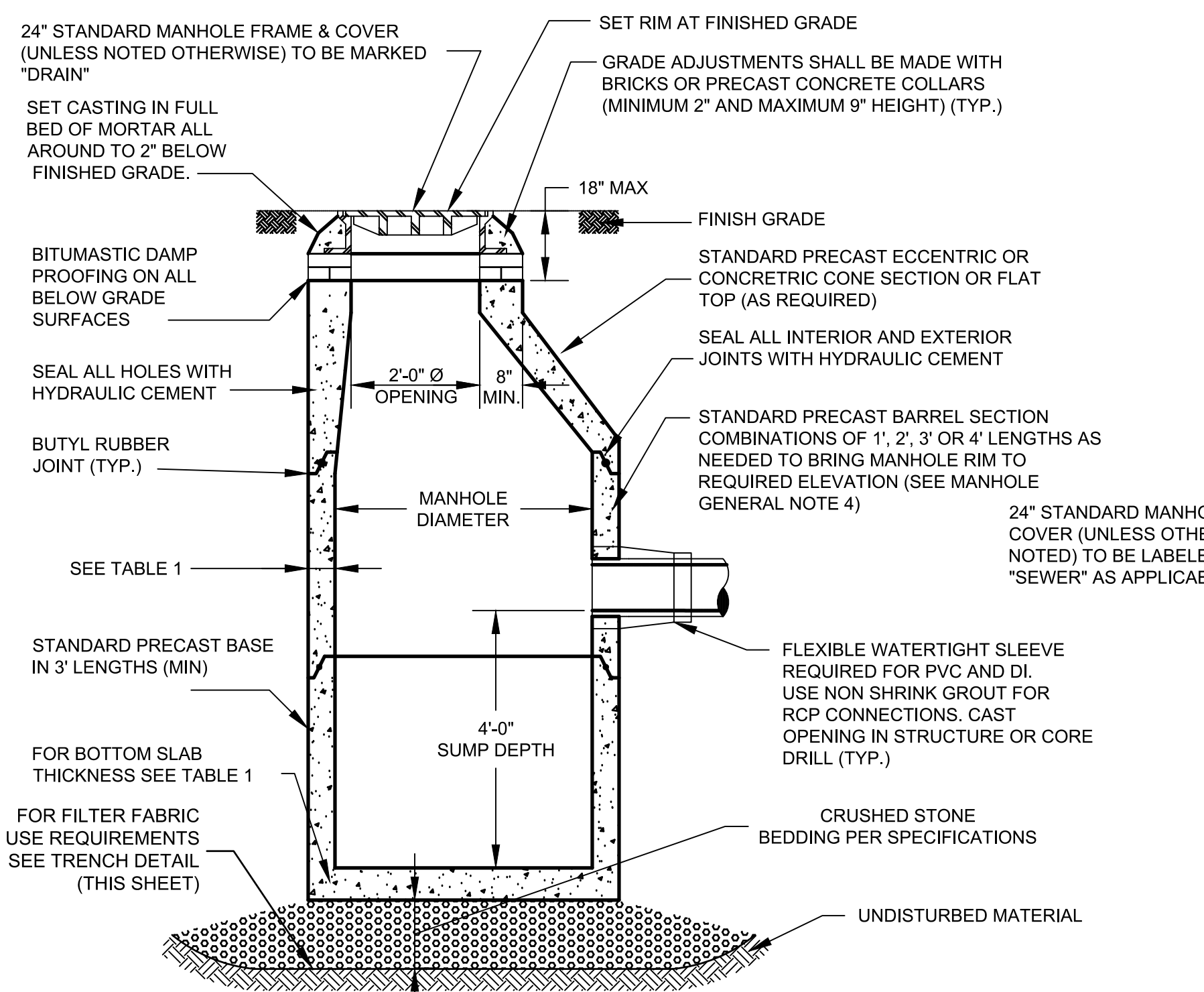
PIPE SIZE (DIA.)	MAX TRENCH WIDTH
LESS THAN 2"	2'-0"
2" TO 6"	3'-0"
8" TO 22"	4'-0"
24" & GREATER	I.D. + 2'-0"

I.D. = INSIDE DIMENSION

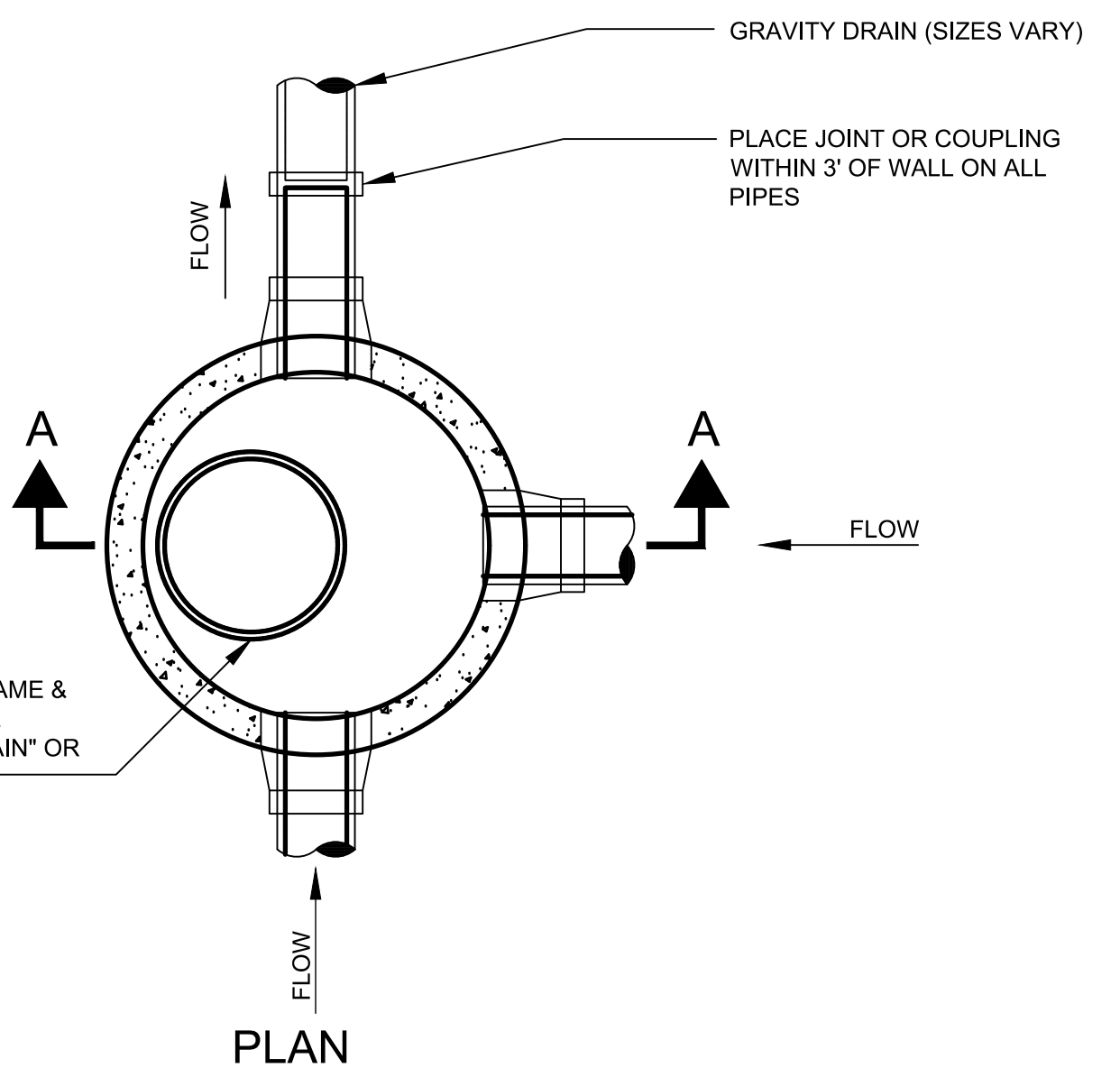
FOR TRENCHES GREATER THAN 5' DEEP ADD MAXIMUM 3' FOR TEMPORARY SUPPORT OF EXCAVATION

FILTER FABRIC USE

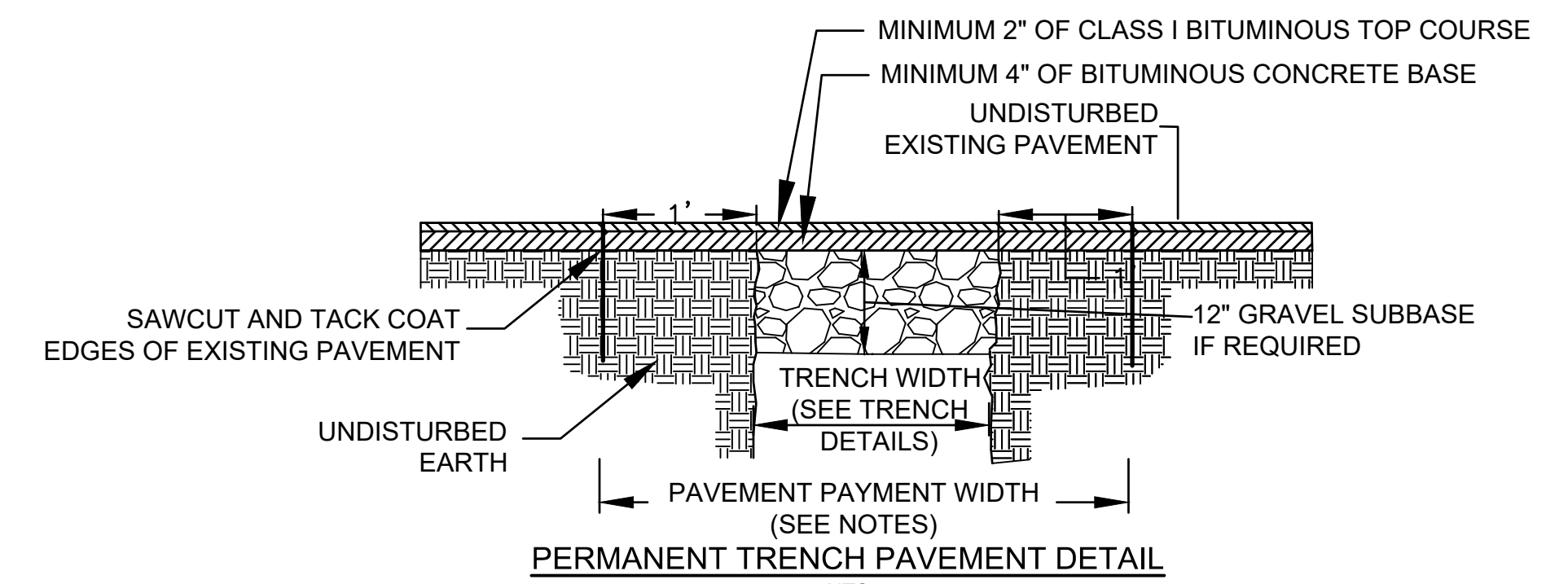
	SOIL TYPE	
	SILT OR CLAY	GRANULAR SOIL
ABOVE GROUND WATER	FILTER FABRIC NOT REQUIRED	FILTER FABRIC NOT REQUIRED
BELOW GROUND WATER	FILTER FABRIC REQUIRED	FILTER FABRIC NOT REQUIRED



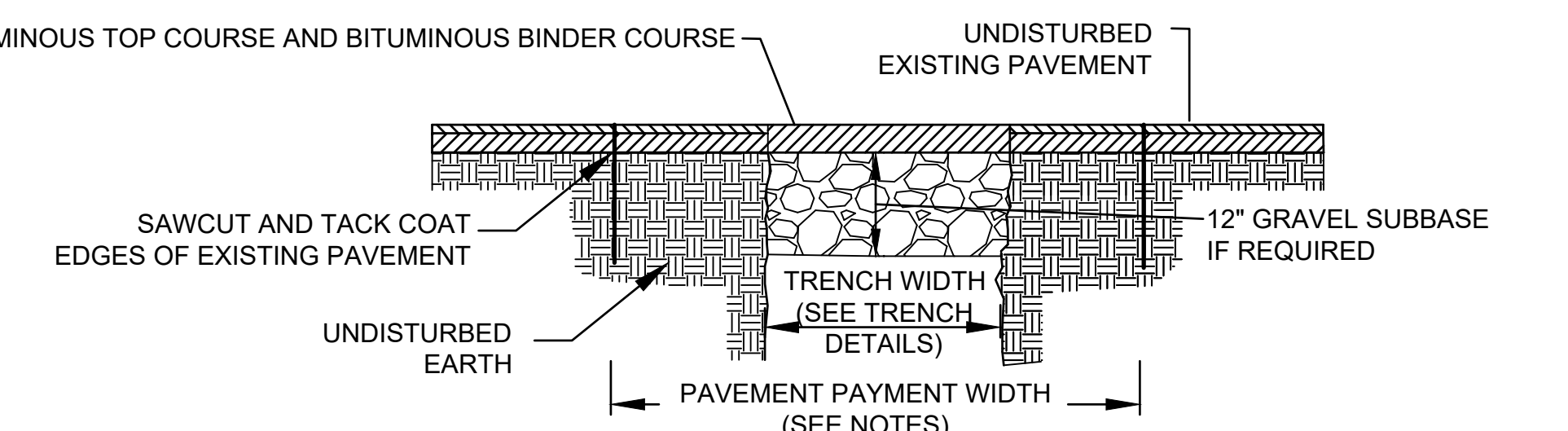
SECTION A-A
DRAIN MANHOLE DETAIL - 4 FOOT SUMP
NTS



PLAN



PERMANENT TRENCH PAVEMENT DETAIL
NTS



TEMPORARY TRENCH PAVEMENT DETAIL
NTS

- NOTES:**
- PERMANENT TRENCH PAVEMENT PAYMENT WIDTH SHALL BE THE TRENCH PAY LIMIT PLUS 2 FEET
 - TEMPORARY TRENCH PAVEMENT PAYMENT WIDTH SHALL BE EQUAL TO THE TRENCH PAYMENT LIMIT.
 - REMOVE AND DISPOSE ALL TEMPORARY PAVEMENT AS REQUIRED. RESTORE AND COMPACT SUBBASE AS REQUIRED PRIOR TO PERMANENT TRENCH PAVEMENT.

TABLE 1

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

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

WALL THICKNESS	MAX TRENCH WIDTH
LESS THAN 6"	I.D. + 5'-0"
6" TO 12"	I.D. + 6'-0"
13" TO 18"	I.D. + 7'-0"
19" & GREATER	I.D. + 6'-0"

I.D. = INSIDE DIMENSION
O.D. = OUTSIDE DIMENSION

FOR TRENCHES GREATER THAN 5' DEEP AND 3' FOR TEMPORARY SUPPORT OF EXCAVATION

MANHOLE GENERAL NOTES:

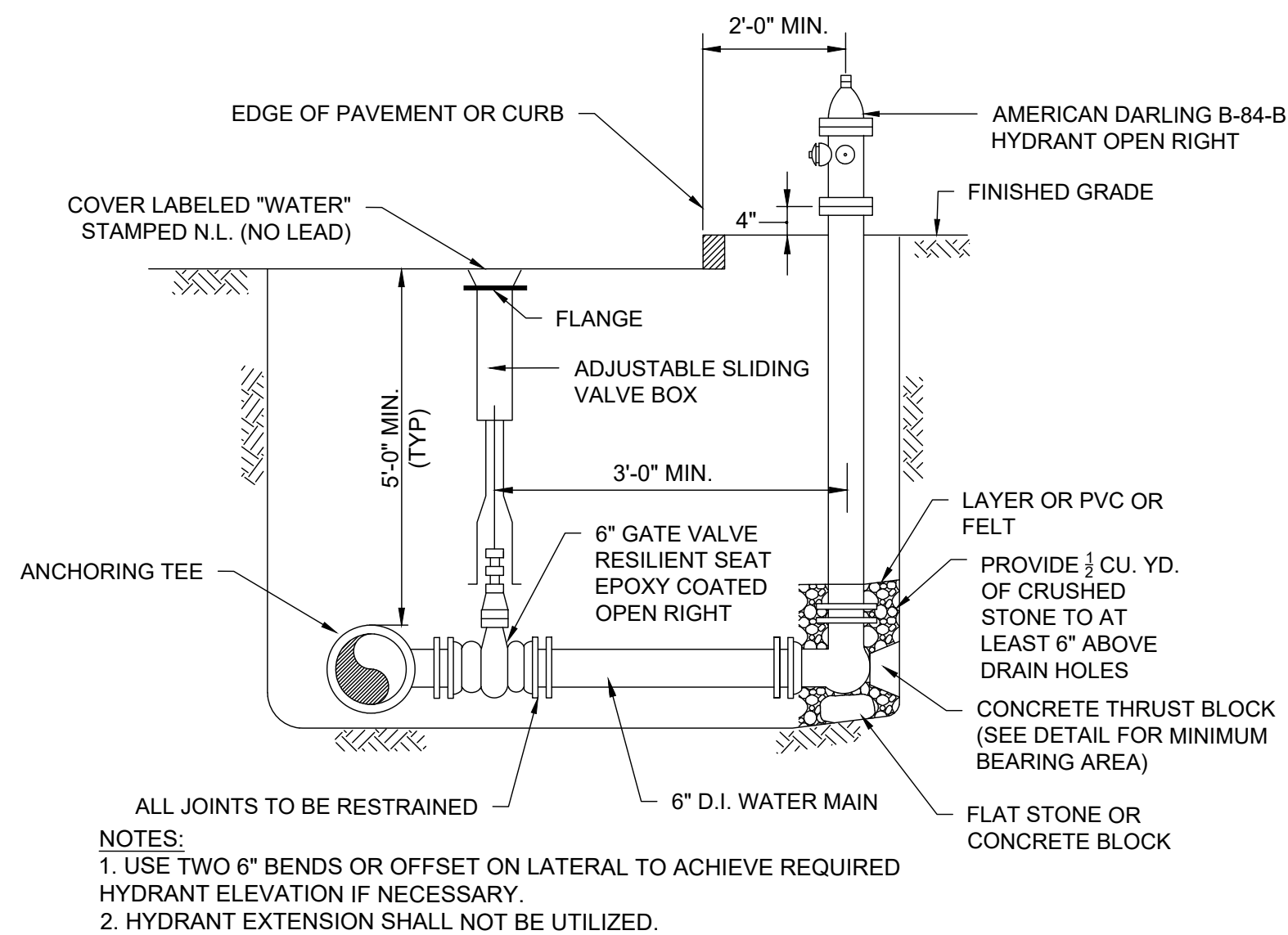
- INNER EDGE OF CONC. TABLE TO BE AT ELEV OF CROWN OF PIPE. TABLE TO SLOPE AT 8.3% TO INSIDE OF MANHOLE BASE.
- DRAIN MANHOLE DIAMETER SHALL BE 4', 5', 6' OR 8' AS SHOWN ON PLAN
- DESIGN PRECAST AND CAST IN PLACE SECTIONS WITH FRAME AND COVER FOR AASHTO H20 LOADINGS.
- MANHOLES LARGER THAN 4' IN DIAMETER AT THE BASE SHALL BE REDUCED IN DIAMETER TO 4' AT THE NEXT RISER SECTION UNLESS NOTED OTHERWISE ON PLANS.

MANHOLE GENERAL NOTES AND DIMENSIONS

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Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	

Client	CITY OF CAMBRIDGE, MA	Sheet	C-2.2
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CIVIL DETAILS 2		



WATERTOWN HYDRANT AND VALVE DETAIL
NTS

- NOTES:
1. USE TWO 6" BENDS OR OFFSET ON LATERAL TO ACHIEVE REQUIRED HYDRANT ELEVATION IF NECESSARY.
2. HYDRANT EXTENSION SHALL NOT BE UTILIZED.

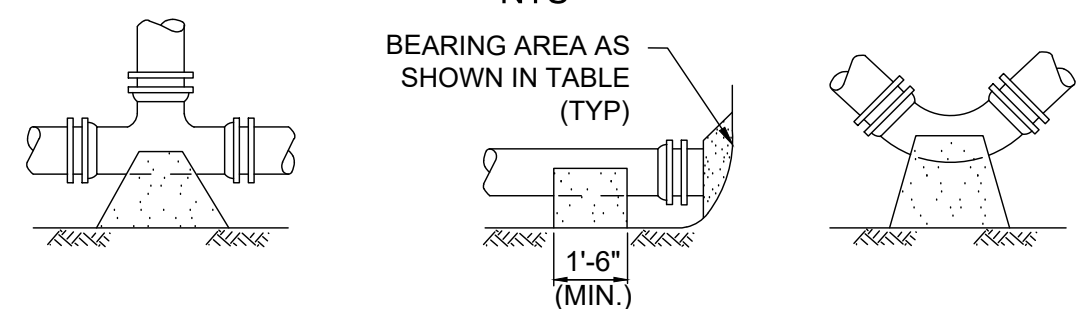
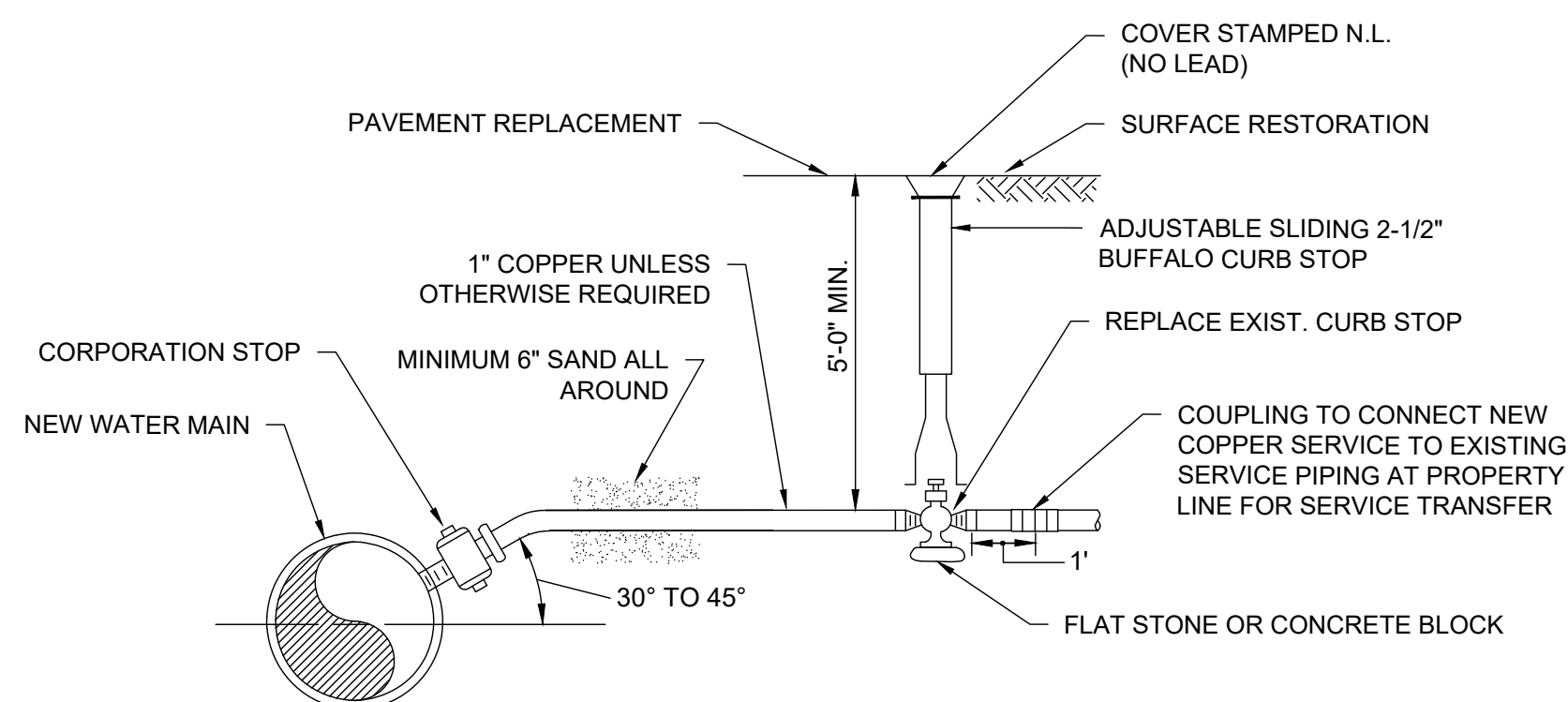


TABLE OF CONCRETE THRUST RESTRAINT MINIMUM BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS

SIZE OF MAIN	90° BENDS, TEES, CAPS AND PLUGS	45° BENDS, AND WYES	22-1/2" BENDS	11-1/4" BENDS
6", 8"	5	4	2	2
10", 12"	12	9	5	2

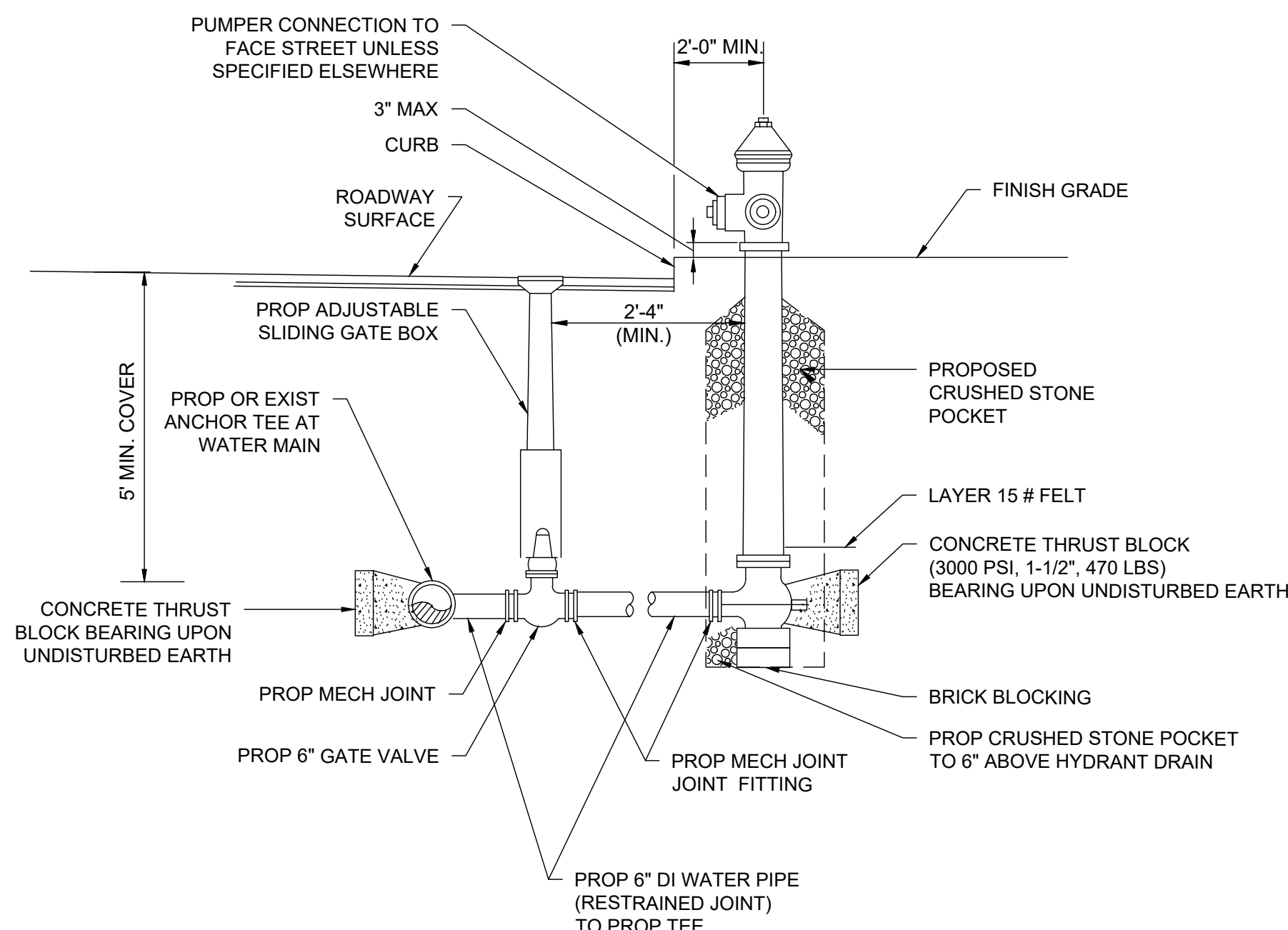
- NOTES:
1. CONCRETE THRUST RESTRAINT SHALL ONLY BE USED WHERE OTHER MEANS OF RESTRAINT ARE NOT FEASIBLE.
2. CONTRACTOR SHALL USE CARE TO AVOID PLACEMENT OF CONCRETE ON THE FITTING JOINTS.

WATERTOWN CONCRETE THRUST RESTRAINT FOR FITTINGS
NTS



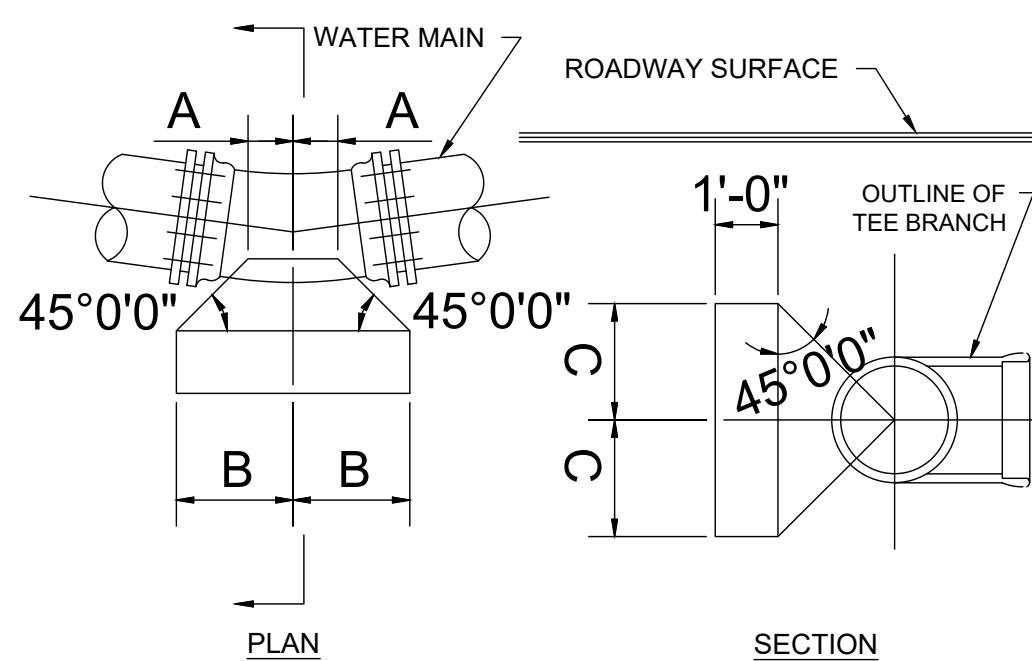
- NOTES:
1. PROVIDE SADDLE FOR ALL 2" OR LARGER STOPS.
2. AN EXTENSION ROD SHALL BE INSTALLED ON ALL CURB STOPS.
3. ALL CURB STOP HEADS SHALL BE DRILLED TO ACCEPT A CURB STOP EXTENSION ROD.
4. ALL WATERWORKS BRASS SHALL BE OF THE "NO-LEAD" TYPE AND SHALL BE STAMPED "N.L."
5. ALL CURB STOPS SHALL BE INSTALLED IN THE SIDEWALK IF A SIDEWALK IS PRESENT OR 18" FROM THE PROPERTY LINE IF NO SIDEWALK PRESENT.

WATERTOWN WATER SERVICE DETAIL
NTS



- NOTES:
1. REFER TO TECHNICAL SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
2. THE CONTRACTOR SHALL RESTRAIN ALL EXISTING PIPE AND FITTINGS WITH CLAMPS, HARNESSES AND/OR ANY OTHER MEANS ACCEPTED BY THE ENGINEER PRIOR TO REMOVING ANY OF THE EXISTING HYDRANT COMPONENTS.
3. FOR HYDRANTS RELOCATED TO NEW MAIN CONNECTION LOCATIONS, THE EXISTING TEE WILL BE REMOVED AND REPLACED WITH A MECHANICAL DRESSER COUPLING AND SUITABLE SIZED SECTION OF PIPE.
4. ALL HYDRANTS SHALL BE CONSISTENT WITH CITY OF CAMBRIDGE WATER DEPARTMENT STANDARDS.
5. IF CONCRETE THRUST BLOCK IS USED, DO NOT BOCK DRAIN.

CAMBRIDGE FIRE HYDRANT DETAIL
NTS

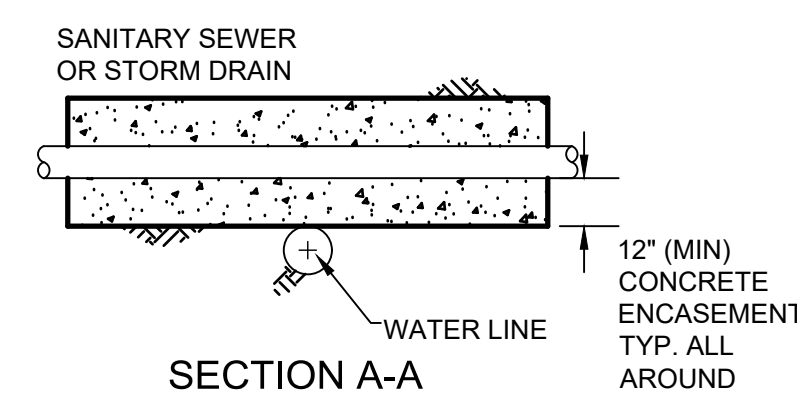


CAMBRIDGE CONCRETE THRUST BLOCK DETAIL
NTS

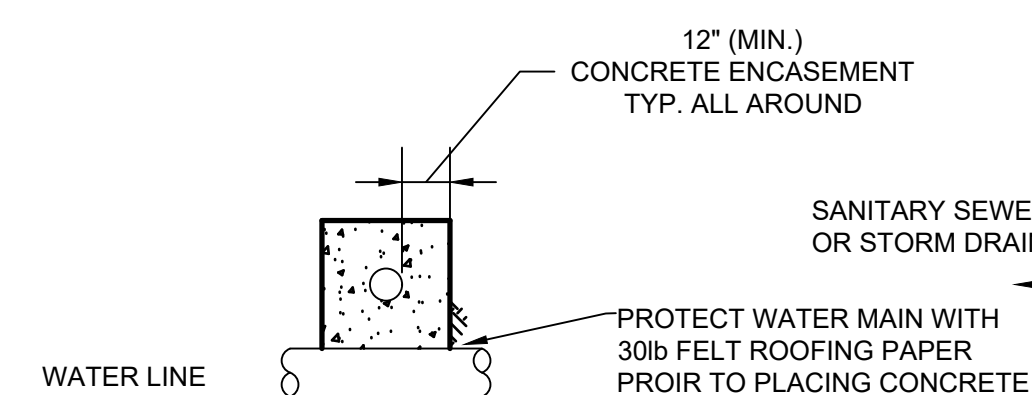
HORIZONTAL THRUST BLOCK SCHEDULE TABLE OF DIMENSIONS IN INCHES

	A	B	C
6", 8" BEND			
1/32, 1/16	6"	10"	10"
1/8	6"	14"	14"
1/4	9"	19"	19"
TEE (BRANCH), HYDRANT			
6"	6"	15"	15"
8"	9"	16"	16"

- NOTES:
1. REFER TO TECHNICAL SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
2. SUBJECT TO FIELD MODIFICATION BY ENGINEER.

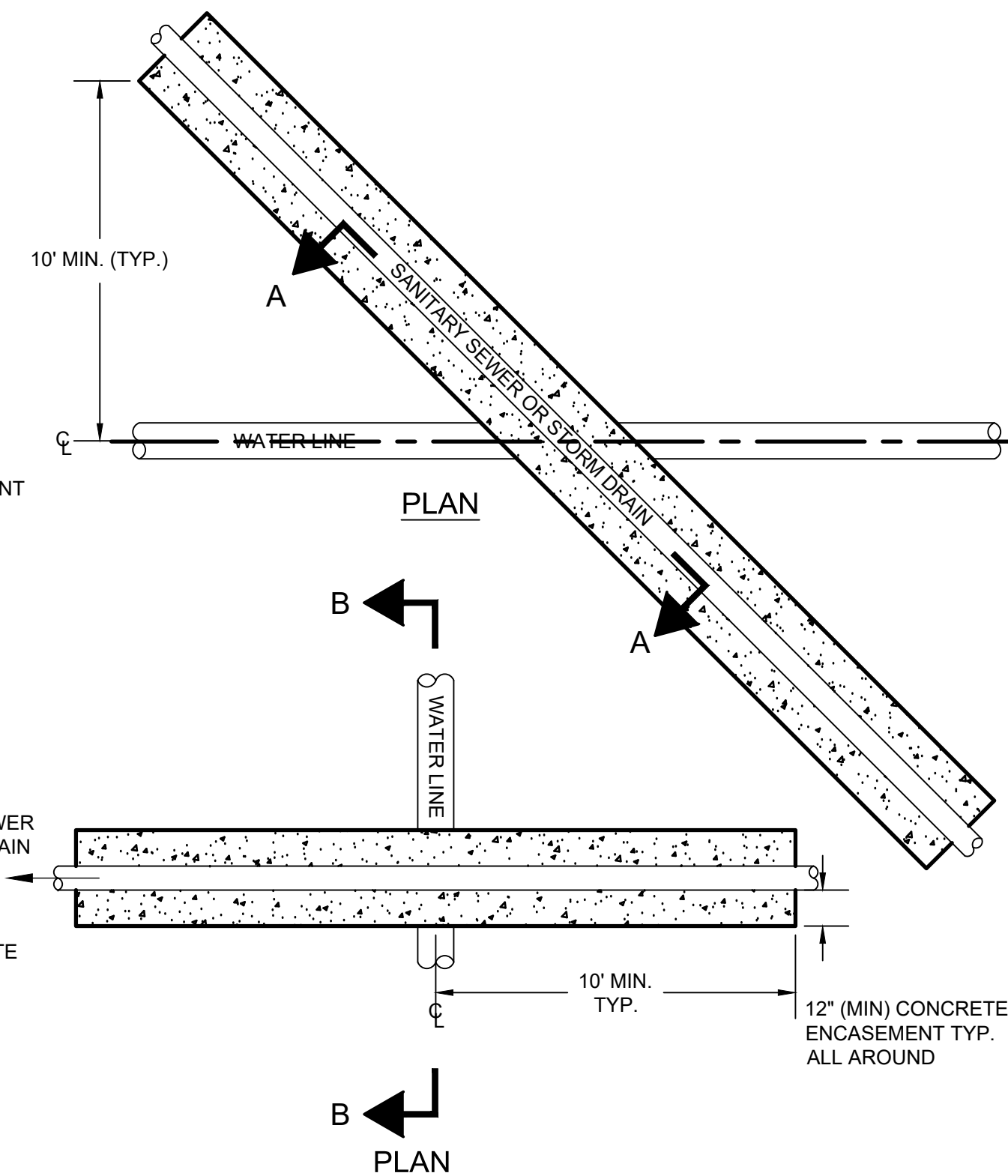


SECTION A-A

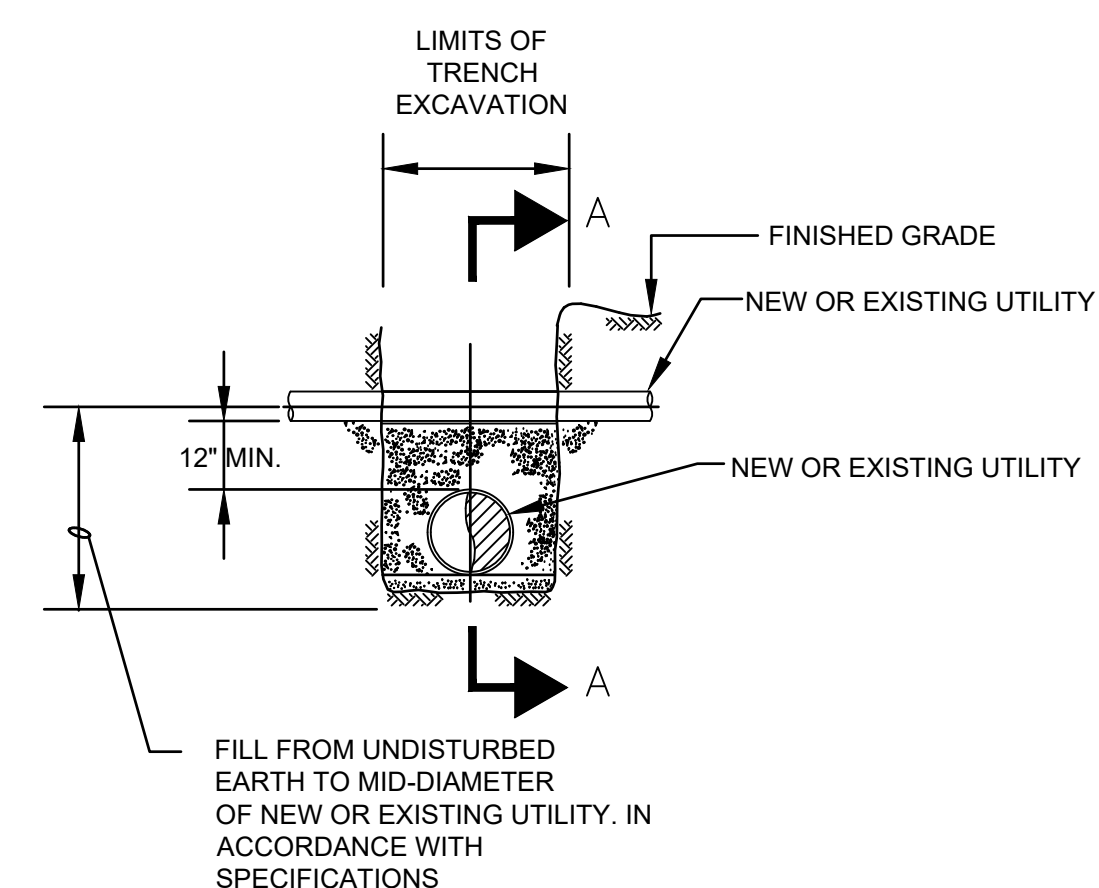


SECTION B-B

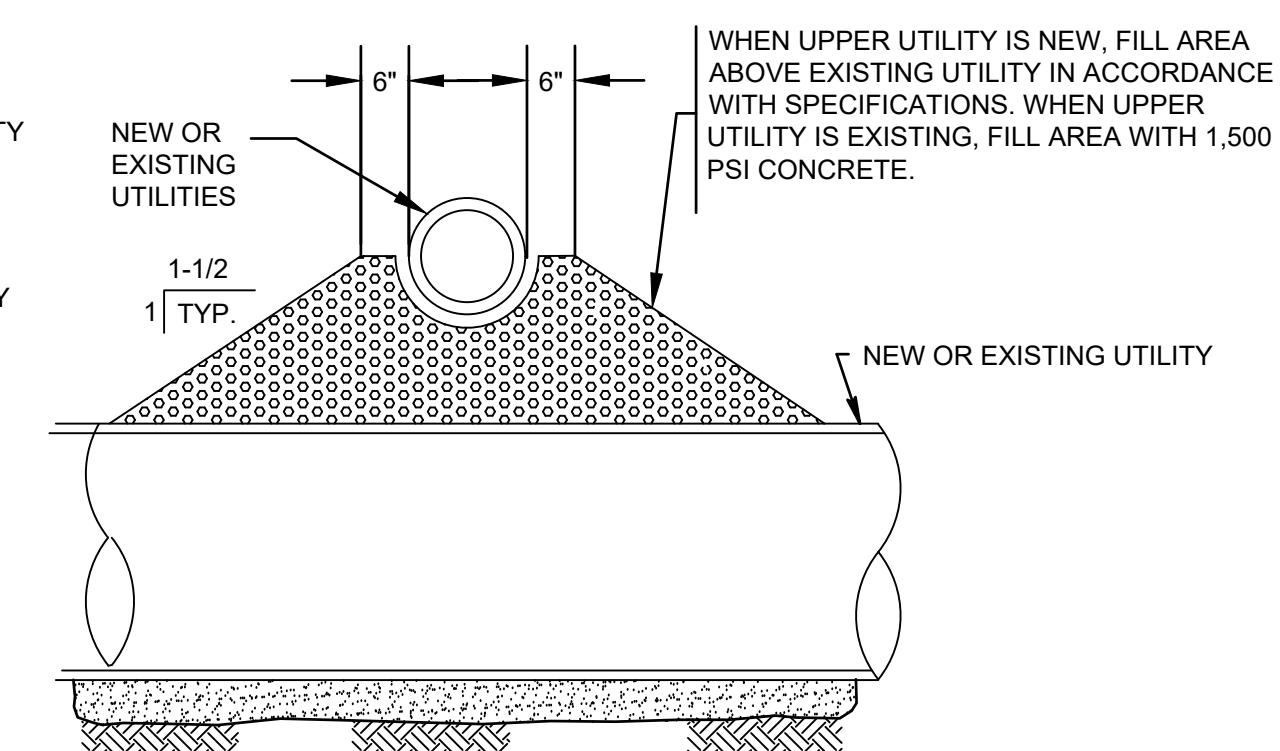
- NOTE:
1. CONCRETE SHALL HAVE A MINIMUM 3,000 PSI STRENGTH



STORM DRAIN AND SANITARY SEWER CROSSING ABOVE WATER MAIN
NTS



ELEVATION



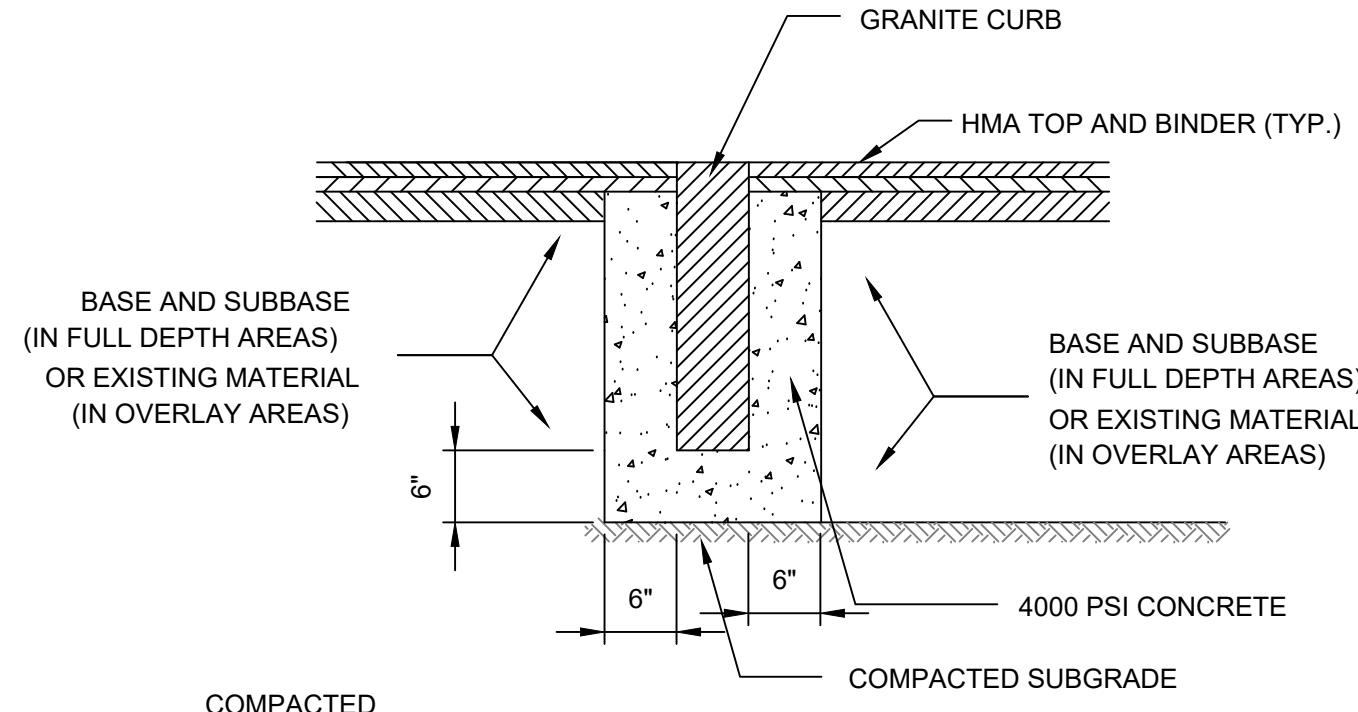
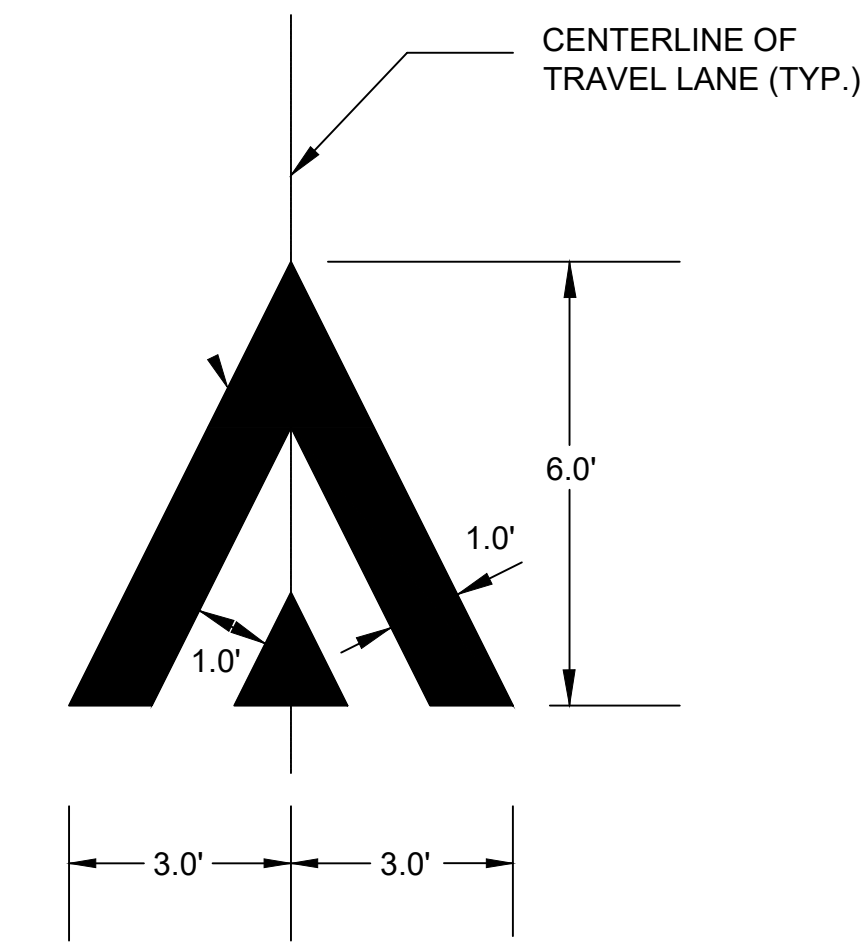
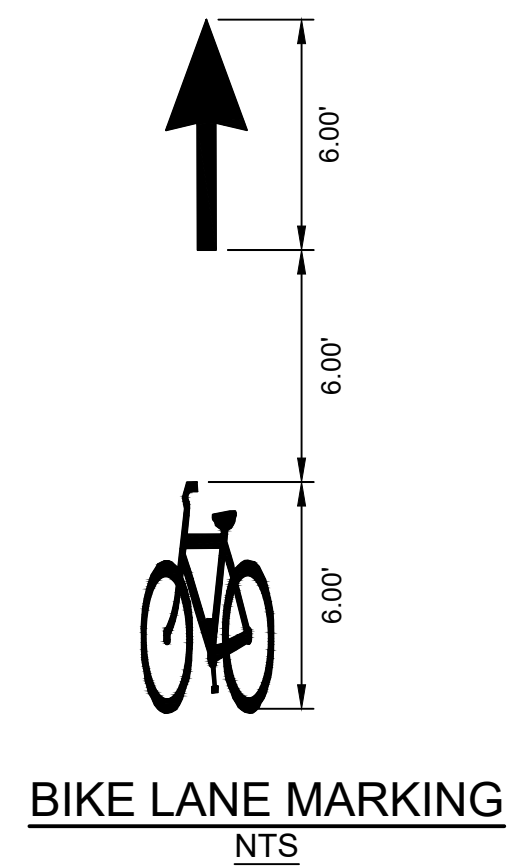
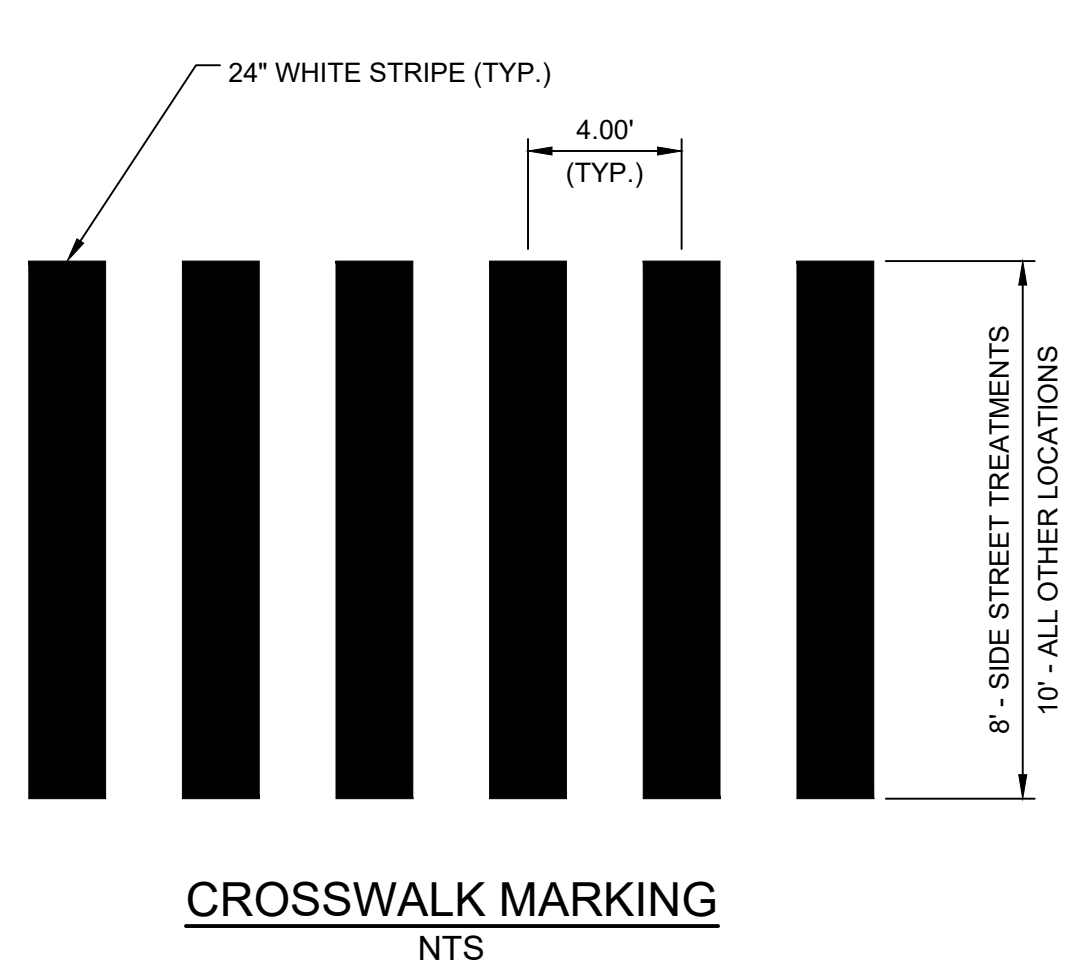
SECTION A-A

UTILITY CROSSING DETAIL
NTS

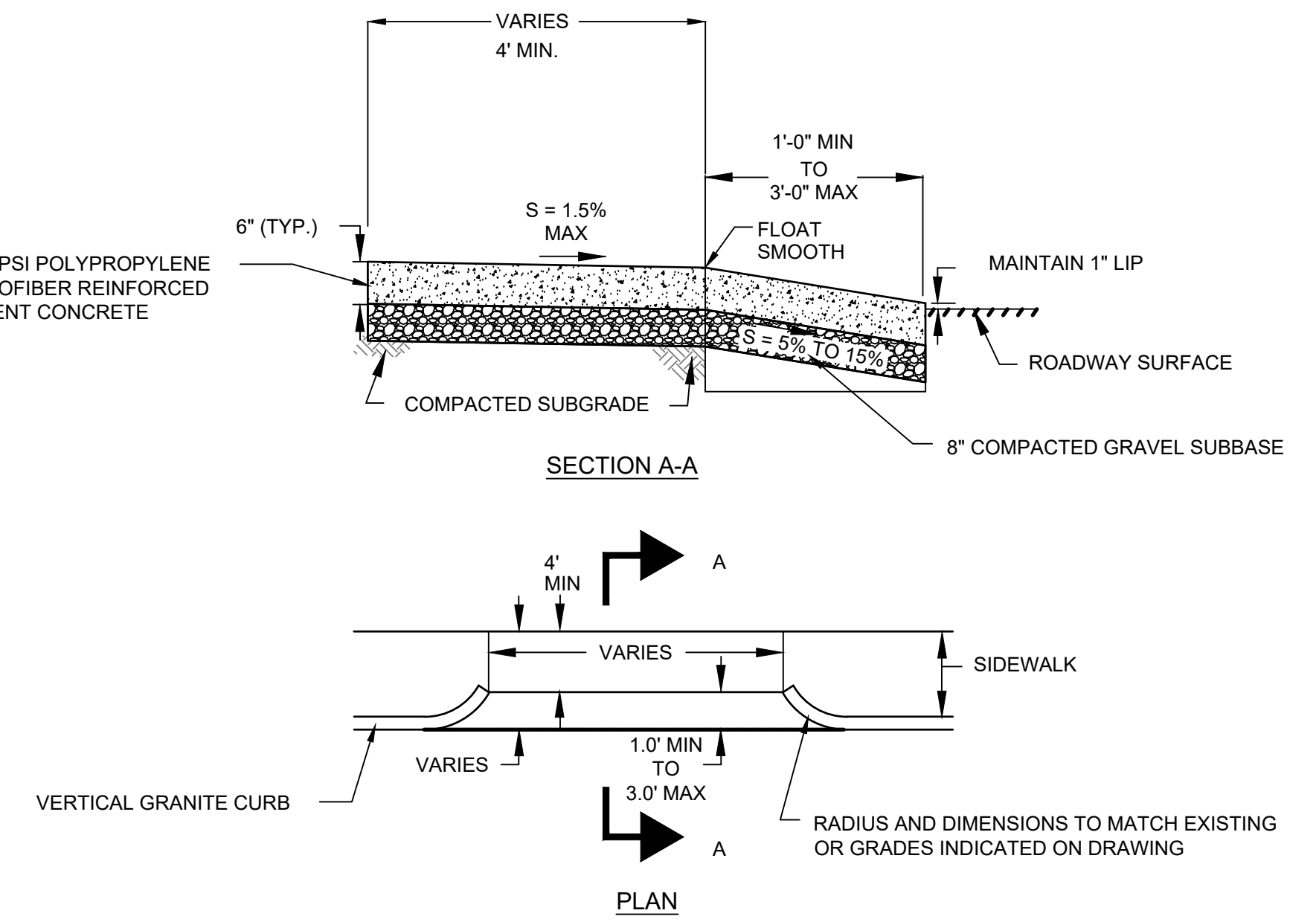
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Date	MARCH 2022			
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Designed by	JCD			
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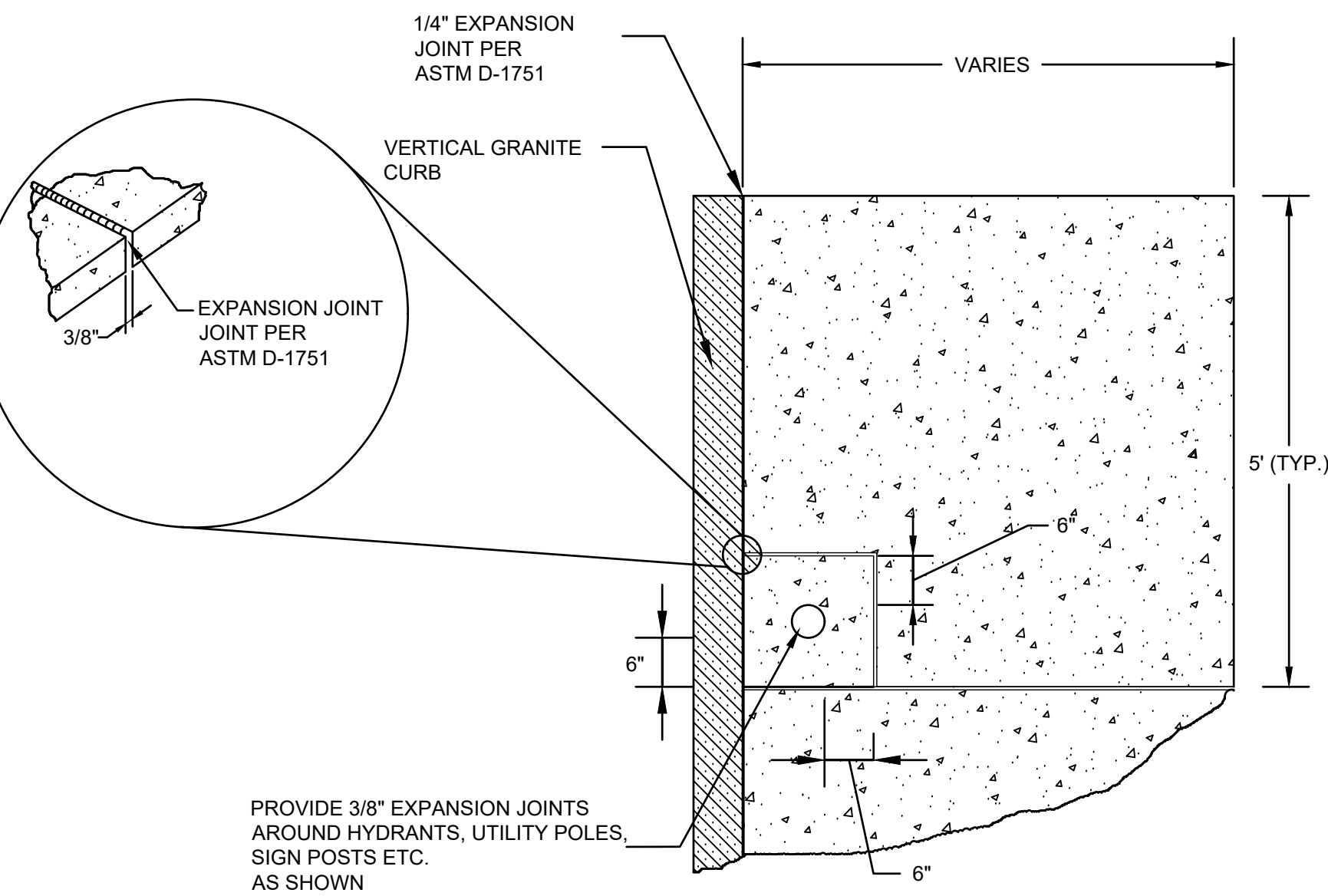
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Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CIVIL DETAILS 3		



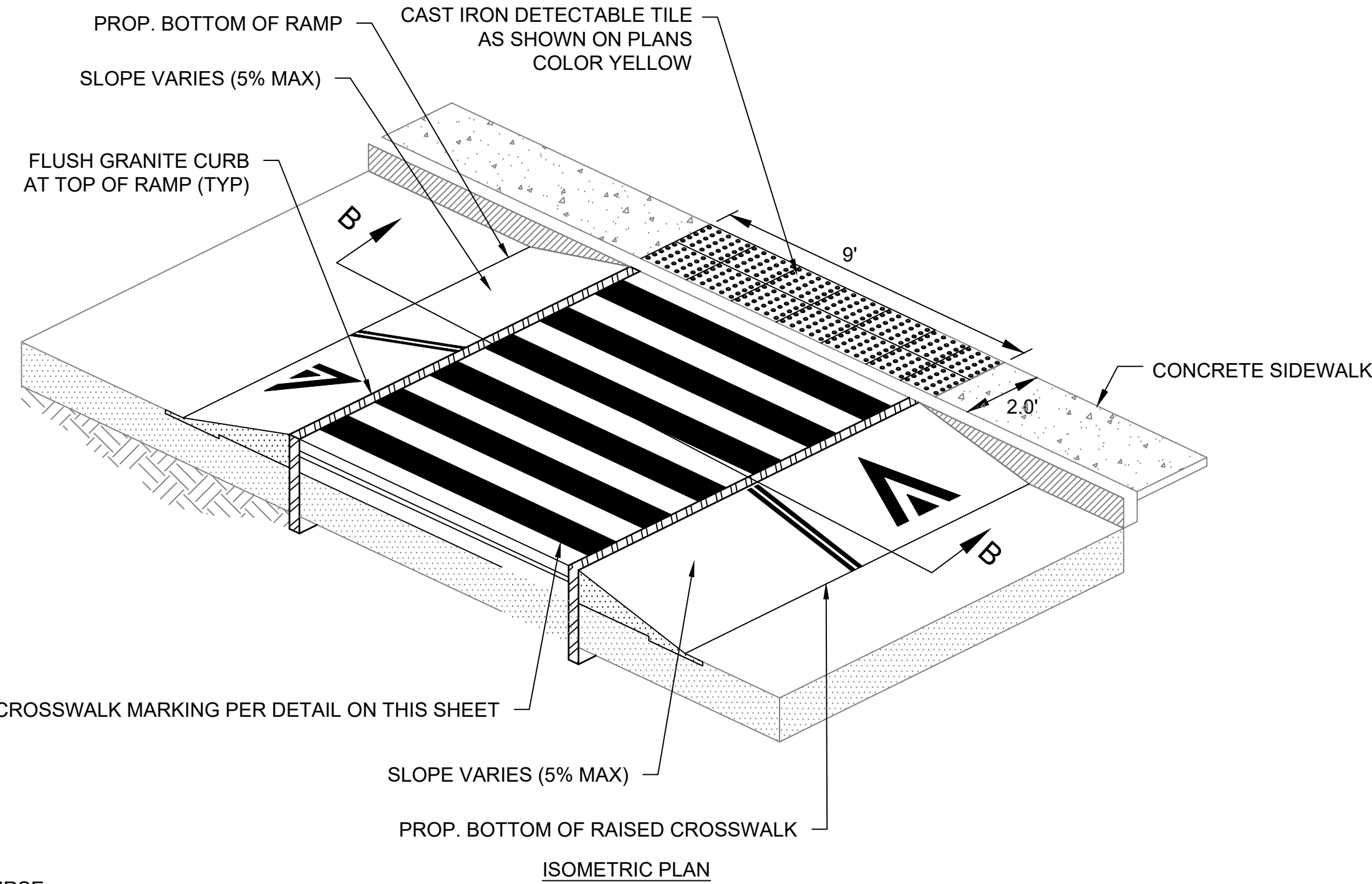
NOTE:
1. EXISTING MATERIAL SHALL BE USED IF DEEMED SUITABLE BY THE ENGINEER.



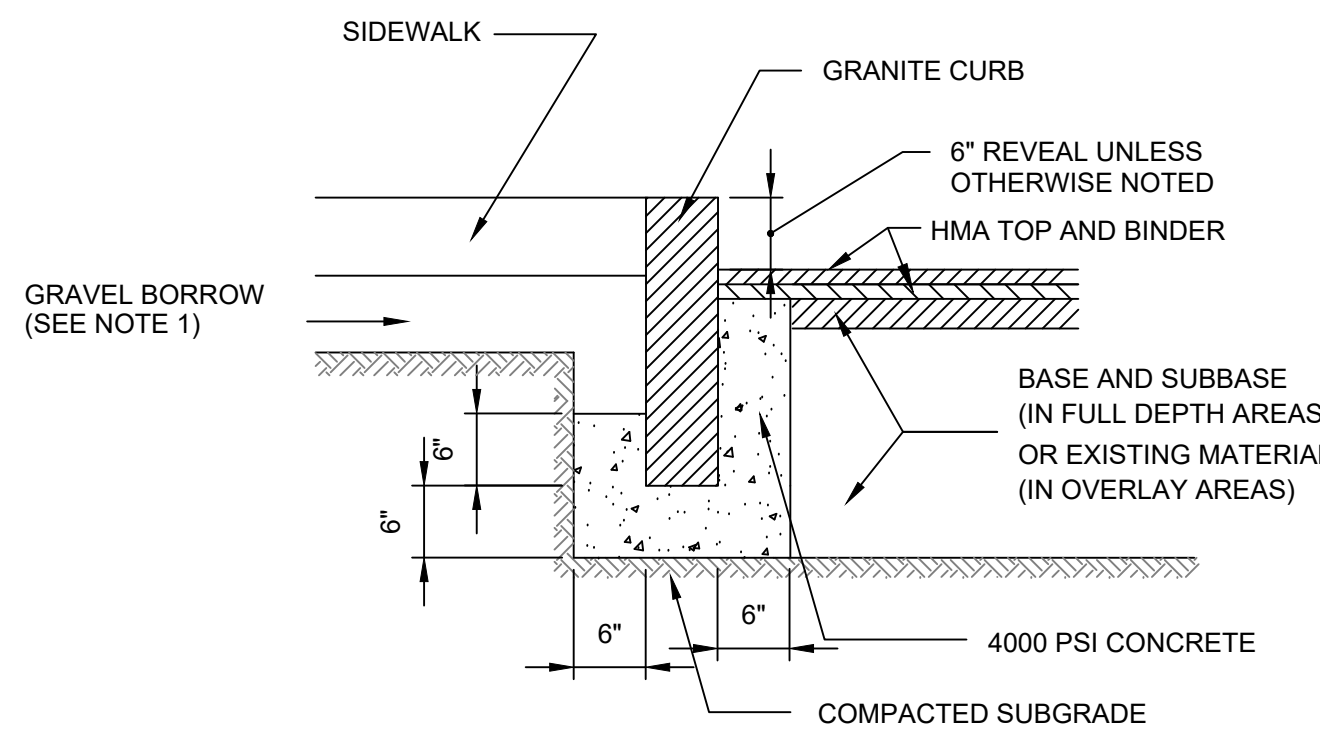
CONCRETE DRIVEWAY APRON
NTS



SIDEWALK EXPANSION JOINT DETAIL
NTS

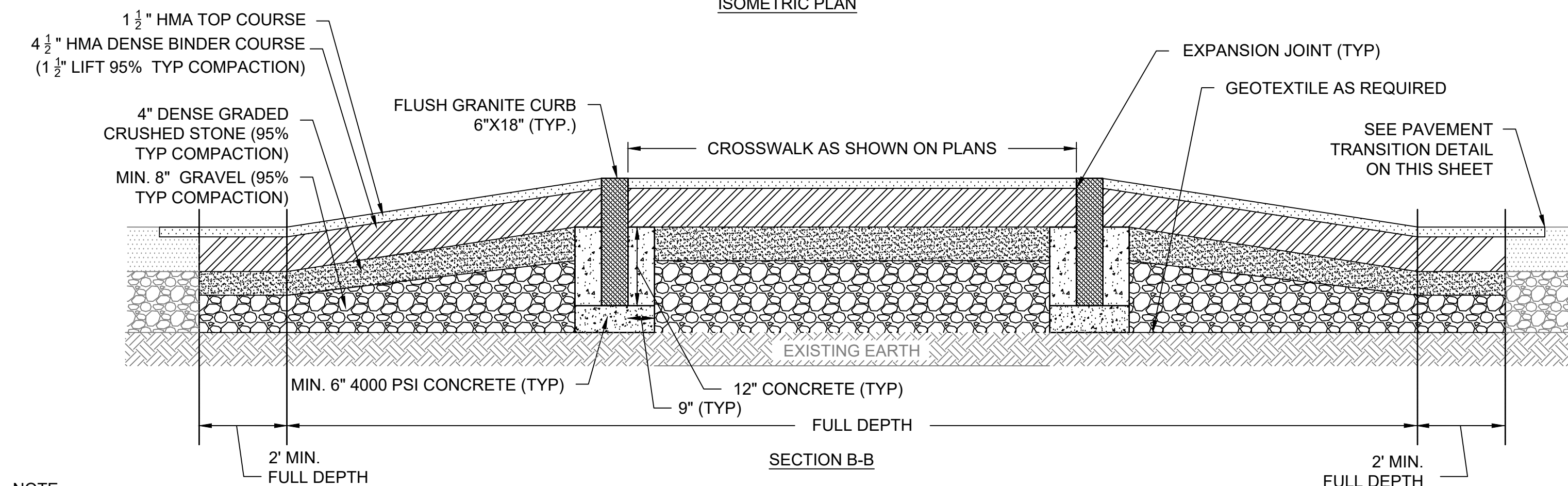


ISOMETRIC PLAN



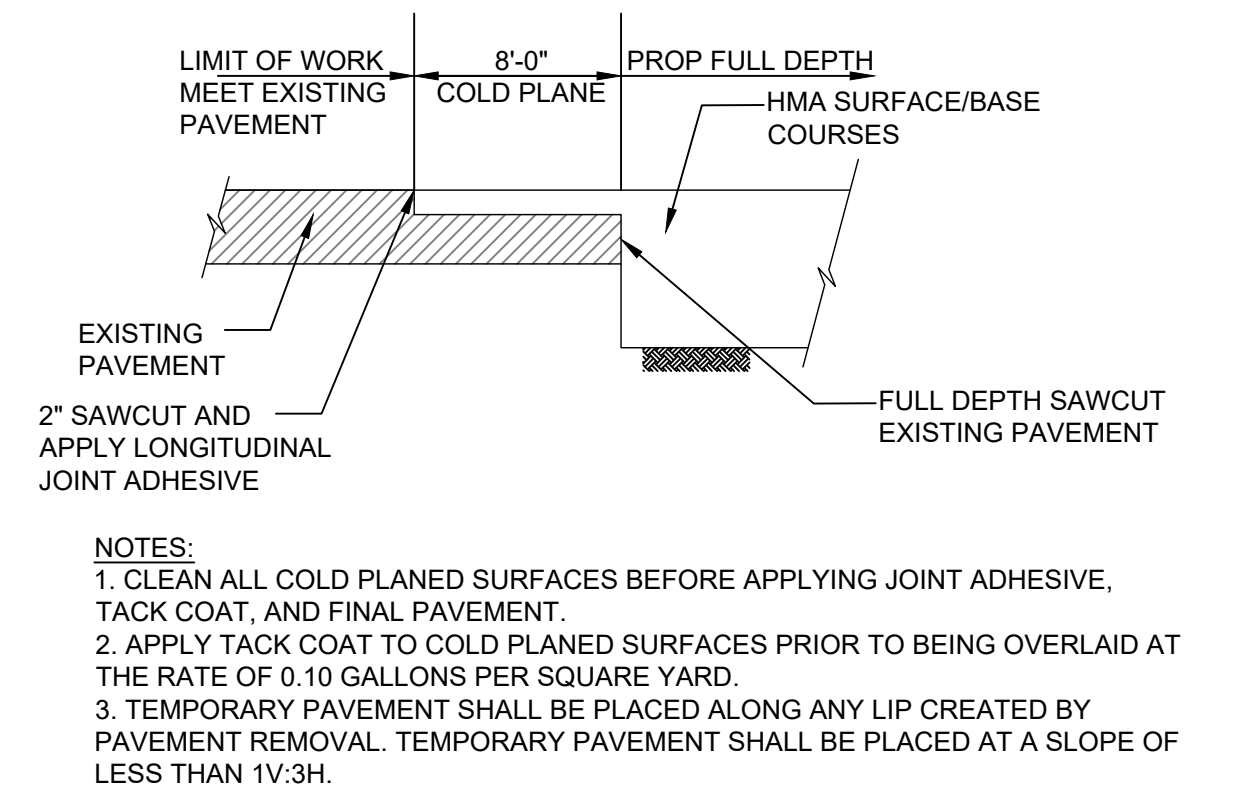
NOTE:
1. EXISTING MATERIAL SHALL BE USED IF DEEMED SUITABLE BY THE ENGINEER.

GRANITE CURB INSTALLATION
NTS



NOTE:
SEE SPECIFICATIONS FOR ADDITIONAL RAISED INTERSECTION CONSTRUCTION REQUIREMENTS

RAISED CROSSWALK - SIDE STREETS
NTS



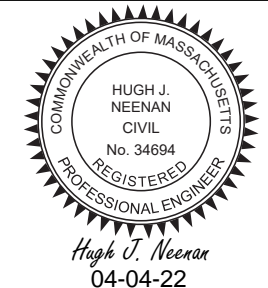
NOTES:
1. CLEAN ALL COLD PLANED SURFACES BEFORE APPLYING JOINT ADHESIVE, TACK COAT, AND FINAL PAVEMENT.
2. APPLY TACK COAT TO COLD PLANED SURFACES PRIOR TO BEING OVERLAID AT THE RATE OF 0.10 GALLONS PER SQUARE YARD.
3. TEMPORARY PAVEMENT SHALL BE PLACED ALONG ANY LIP CREATED BY PAVEMENT REMOVAL. TEMPORARY PAVEMENT SHALL BE PLACED AT A SLOPE OF LESS THAN 1V:3H.

PAVEMENT TRANSITION
NTS

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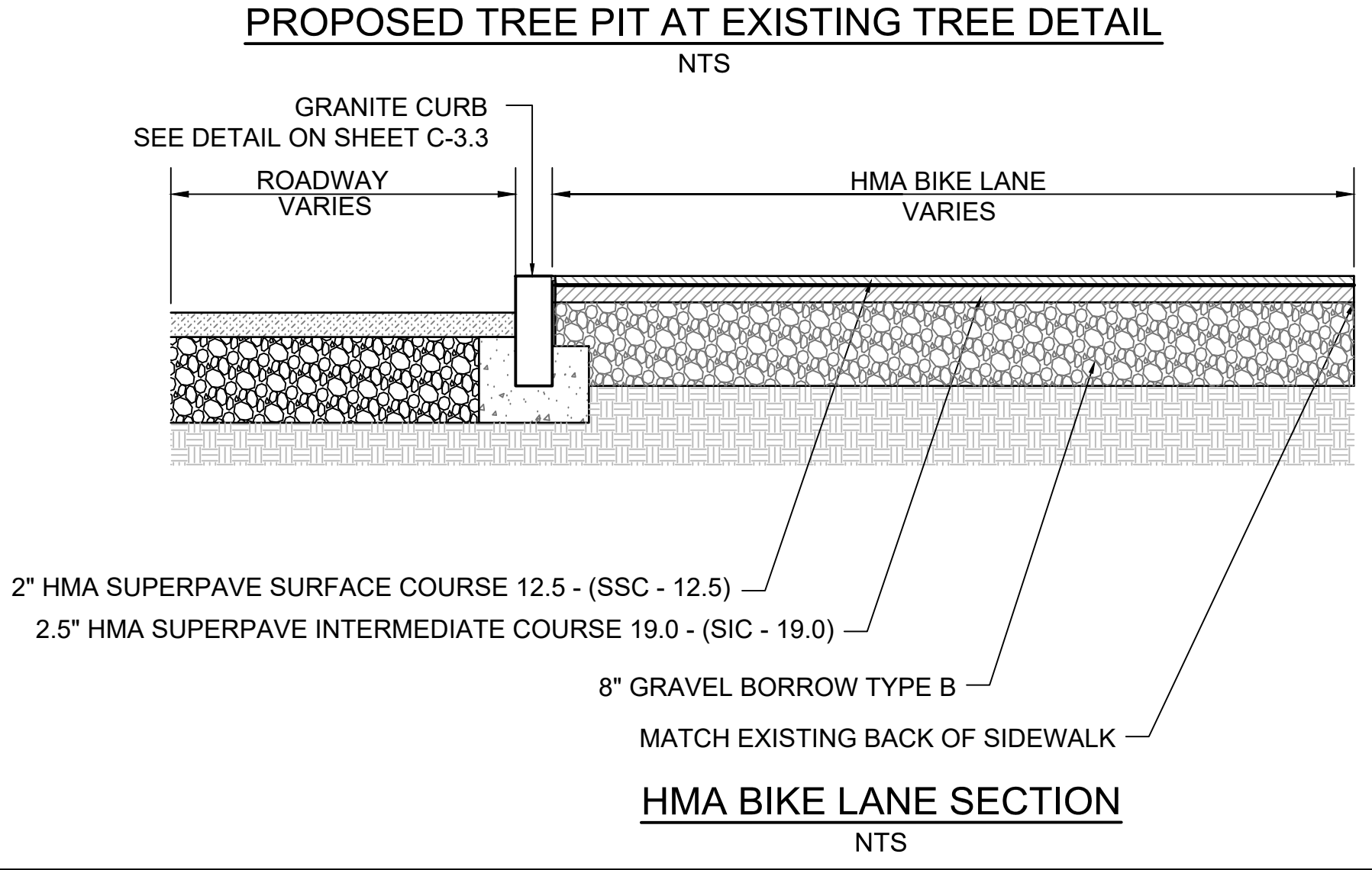
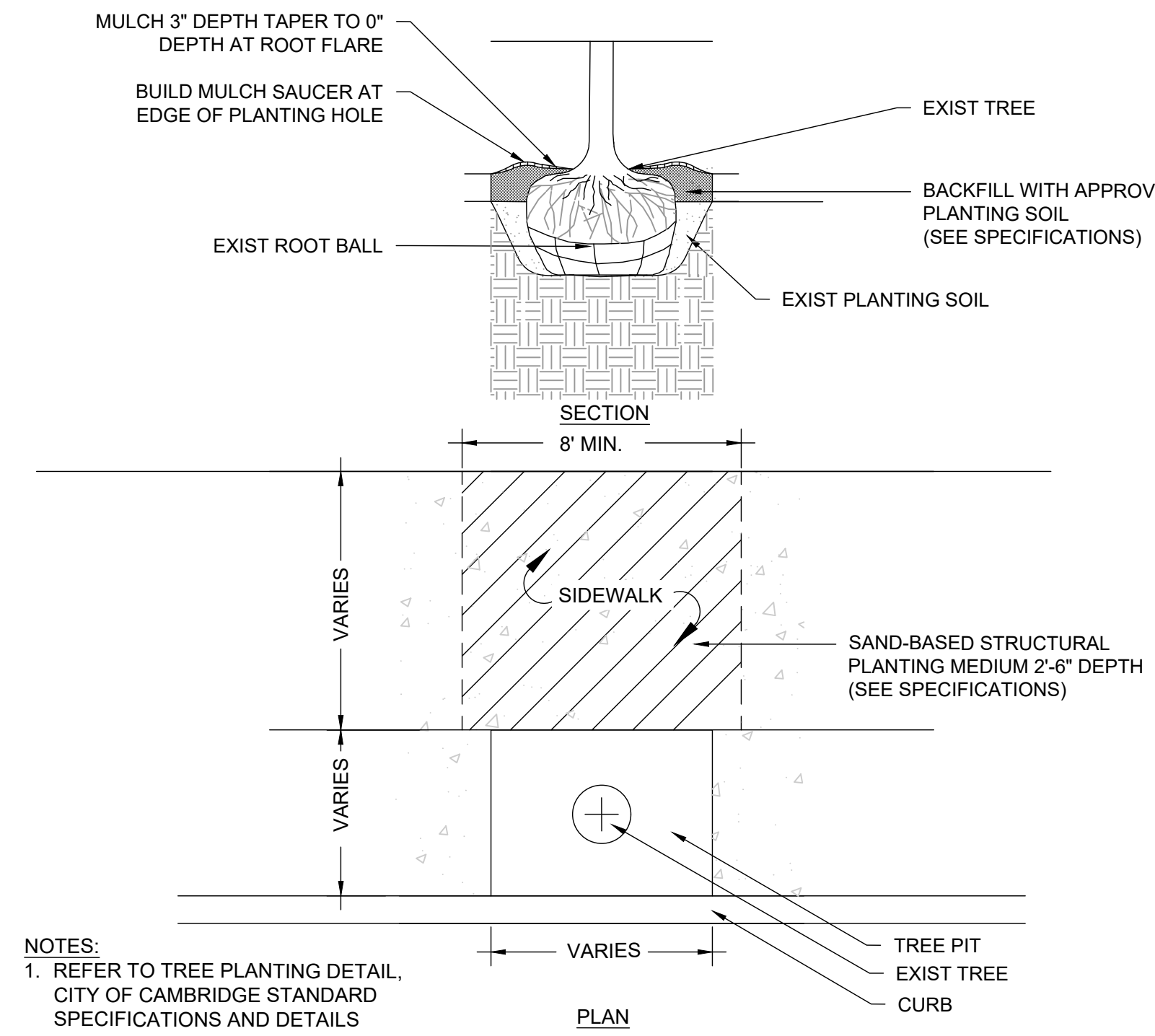
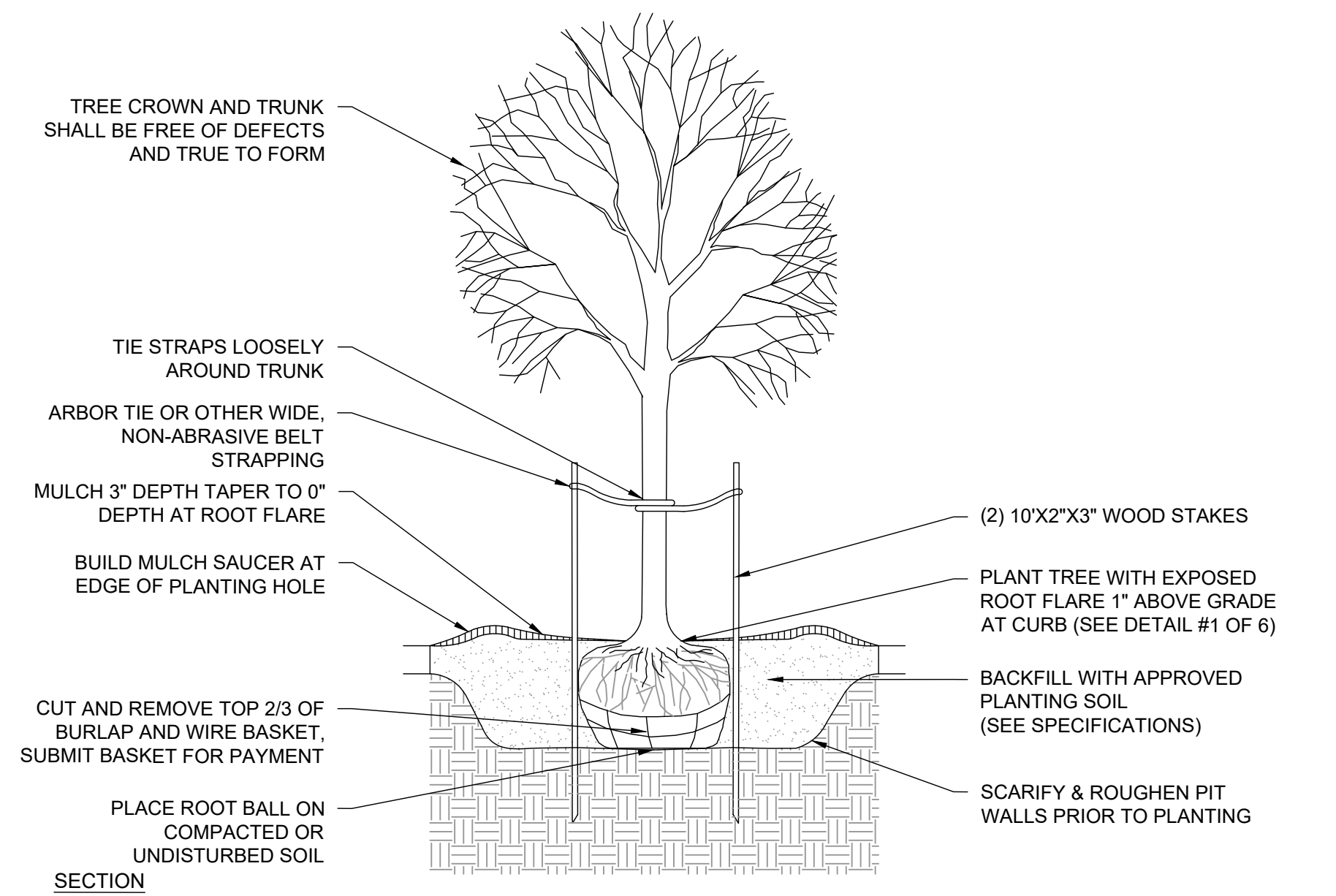
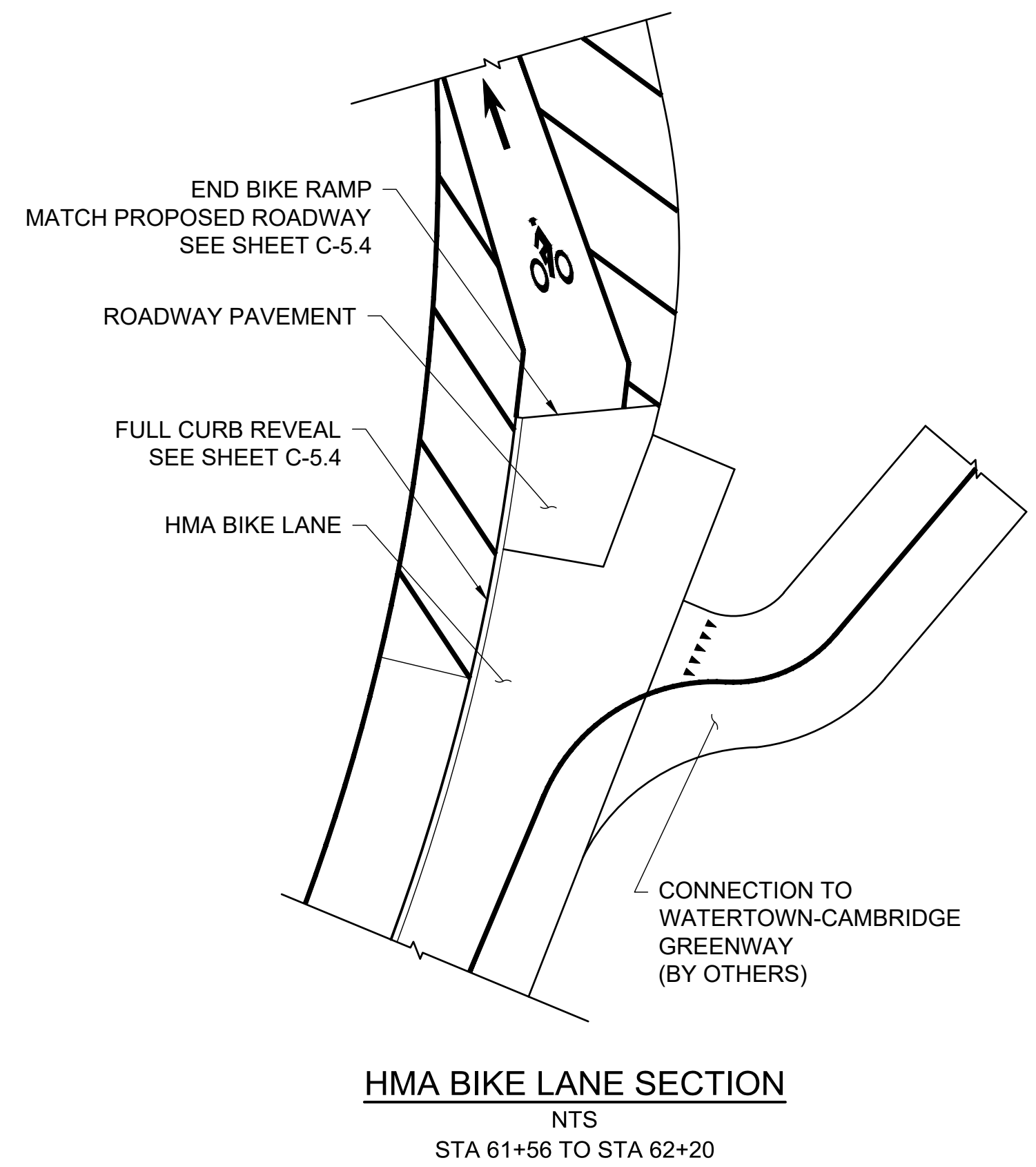
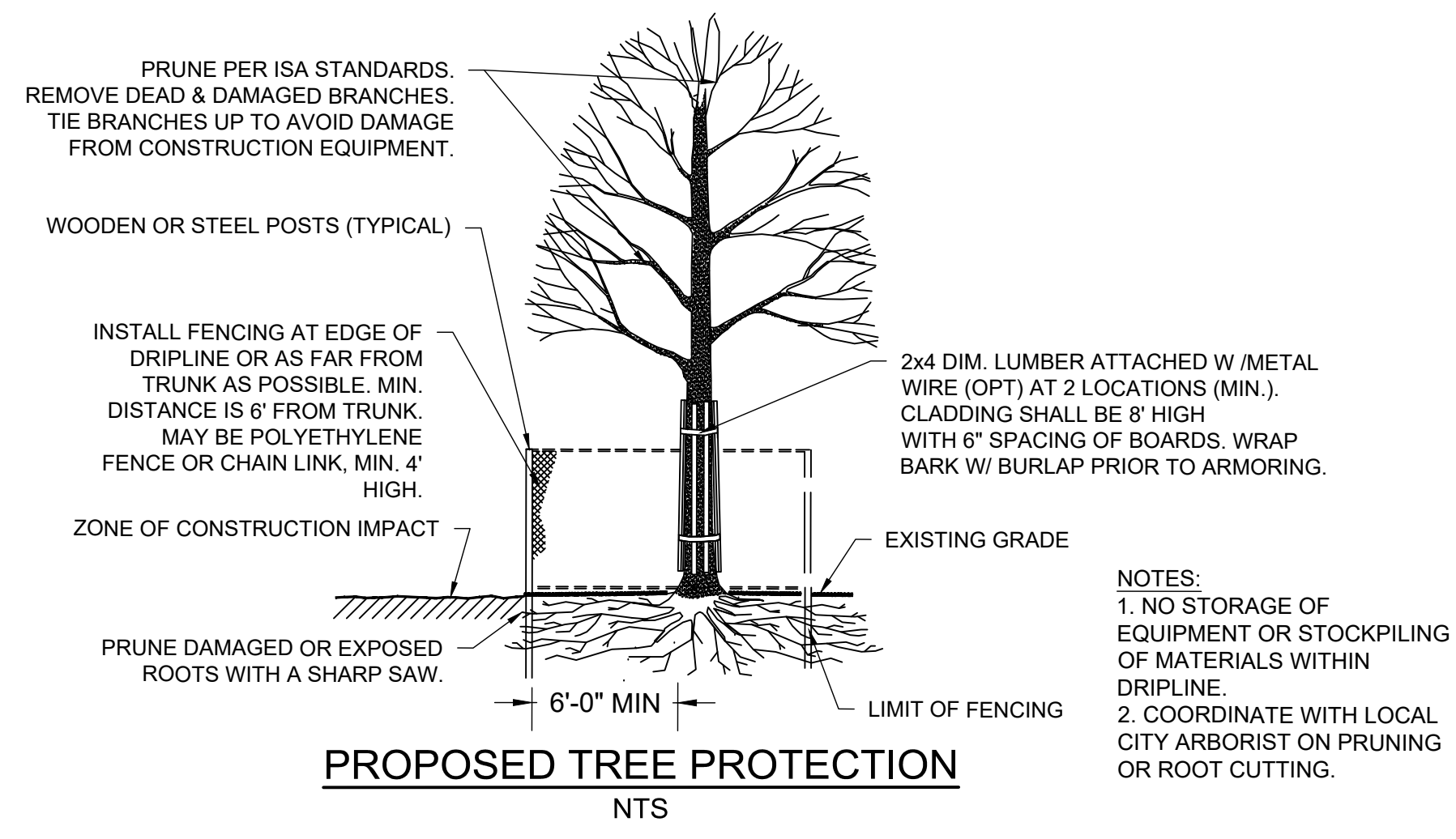
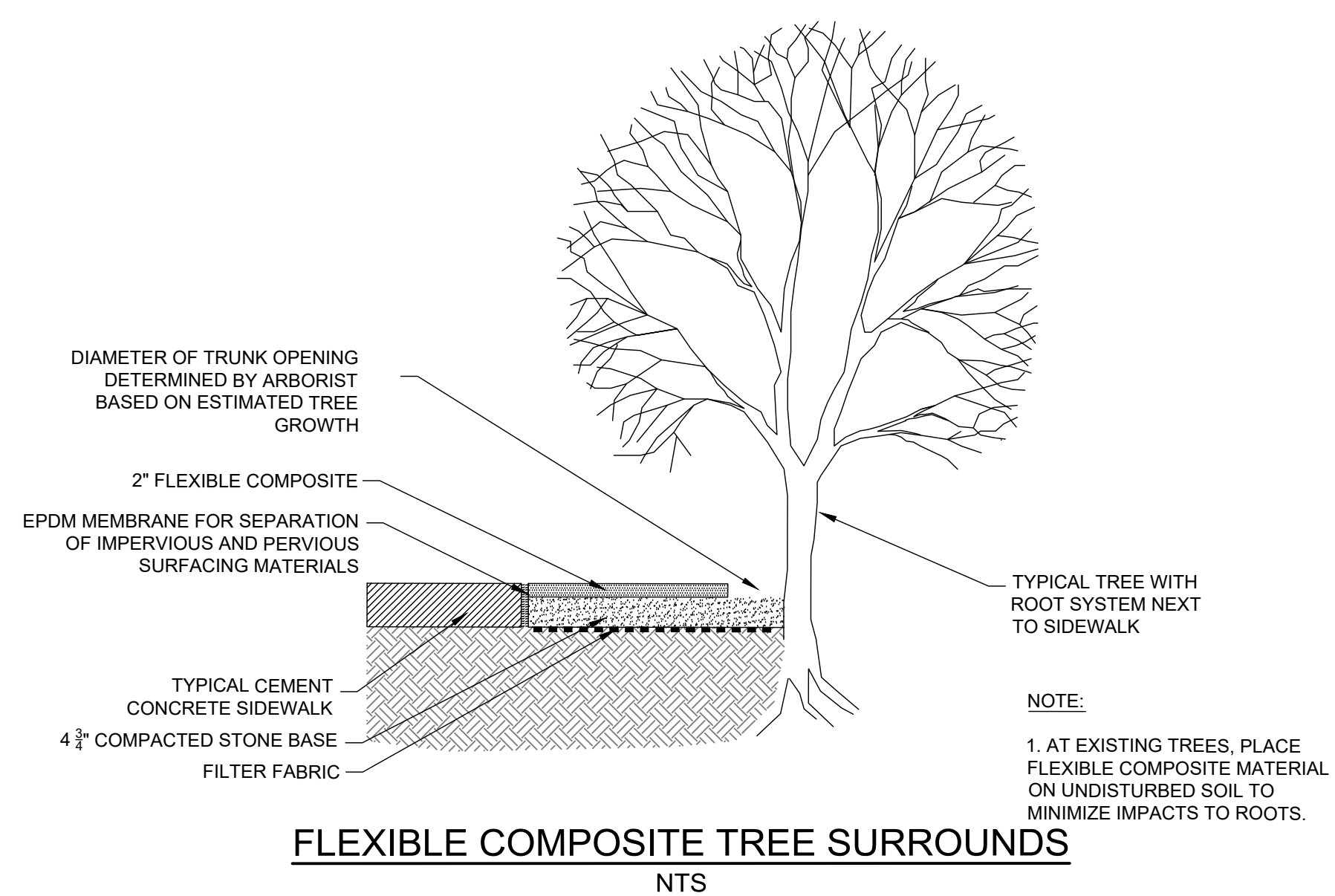
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BOSTON, MASSACHUSETTS 02110-2378
(617) 357-7700



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Client	CITY OF CAMBRIDGE, MA	Sheet	C-2.4
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CIVIL DETAILS 4		



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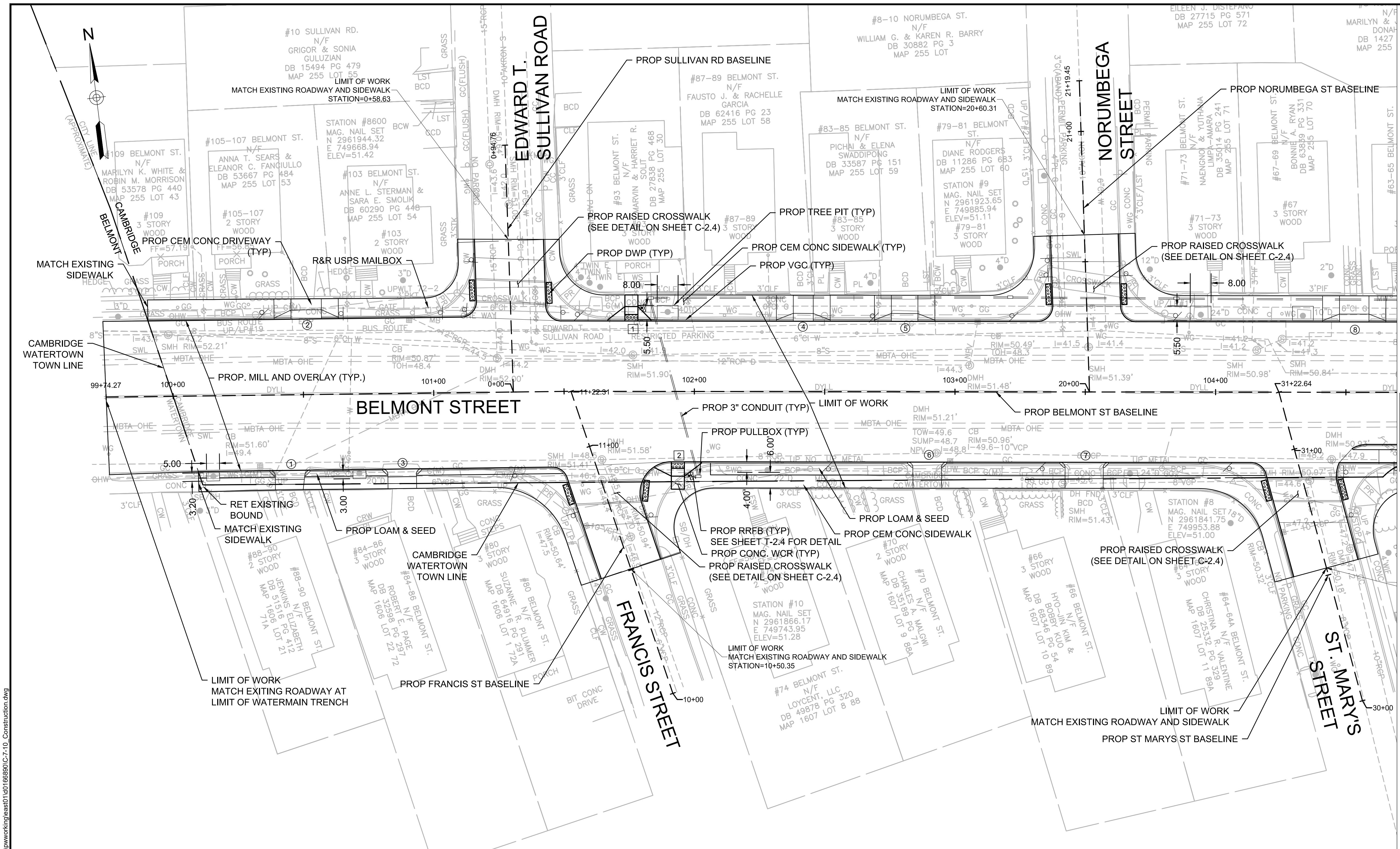
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BOSTON, MASSACHUSETTS 02110-2378
(617) 357-7700

HUGH J. NEENAN
CIVIL
No. 34684
REGISTERED PROFESSIONAL ENGINEER
Hugh J. Neenan
04-04-22

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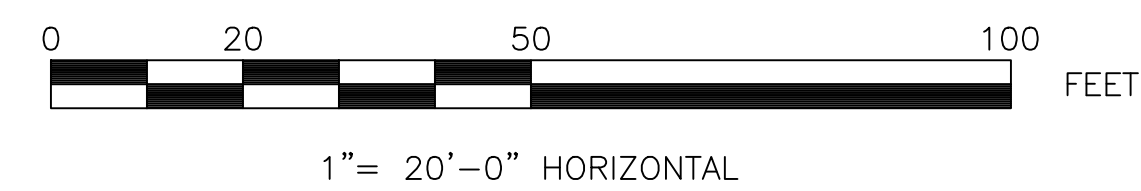


Client	CITY OF CAMBRIDGE, MA	Sheet	C-2.5
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CIVIL DETAILS 5		



- NOTES:
1. SEE SHEET C-1.1-C-1.2 FOR TYPICAL SECTIONS AND PAVEMENT NOTES.
 2. SEE DETAILS ON SHEET C-2.4 FOR CURB INSTALLATION, AND SIDEWALK CONSTRUCTION DETAILS; SHEET C-6.0 FOR PEDESTRIAN RAMP DETAILS; AND SHEET C-7.0 DRIVEWAY DETAILS.
 3. CONTRACTOR SHALL ADJUST EXISTING UTILITY COVERS AND CASTINGS TO RE-GRADED SURFACES. THE CONTRACTOR TO COORDINATE WITH RESPECTIVE UTILITIES COMPANIES FOR GAS/TELECOM/CABLE/ELECTRIC.
 4. ALL VERTICAL GRANITE CURBING WITHIN WORK LIMITS SHALL BE REMOVED AND STORED FOR FUTURE RESET ON THE PROJECT, AS APPROVED BY THE ENGINEER. LOCATIONS FOR THE RESET CURBS SHALL BE APPROVED BY THE ENGINEER. ANY EXISTING GRANITE CURBS NOT RE-USED ON THE PROJECT SHALL BE SALVAGED AND DELIVERED TO A LOCATION DETERMINED BY THE CITY OF CAMBRIDGE PUBLIC WORKS DEPARTMENT.
 5. ALL EXISTING FEATURES AT BACK OF SIDEWALK SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED. DAMAGES OR DISLODGING OF FEATURES AT BACK OF SIDEWALK SHALL BE REPAIRED/REPLACED AT NO ADDITIONAL COST TO THE PRIVATE PROPERTY OWNER OR OWNERS.
 6. ALL EXISTING FEATURES WHICH ARE "TO REMAIN" AND WHICH ARE DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE, INCLUDING BUT NOT LIMITED TO EXISTING CURB, SIDEWALK, ROADWAY LIGHTING, BOUNDS OR PROPERTY MARKERS, HYDRANTS AND UTILITIES.
 7. CONTRACTORS SHALL MATCH THE EXISTING GRADE AT THE LIMIT OF PROPOSED COLD PLANE AND OVERLAY. THE JOINT BETWEEN EXISTING AND PROPOSED PAVEMENT SHALL BE TREATED WITH INFRARED PAVEMENT SEALANT AND HOT Poured RUBBERIZED ASPHALT SEALER.
 8. ALL RIMS, COVERS, GRATES AND OTHER CASTINGS OF EXISTING MUNICIPAL UTILITIES THAT ARE LOCATED WITHIN THE LIMIT OF WORK IN AREAS OF RECONSTRUCTED ROADWAY AND SIDEWALKS SHALL BE ADJUSTED TO MATCH FINAL GRADE. ALL PRIVATE UTILITY CASTINGS SHALL BE ADJUSTED OR REMOVED BY OTHERS. CASTINGS SHALL BE ADJUSTED MULTIPLE TIMES TO FACILITATE SEQUENCE OF WORK INCLUDING AT RAISED CROSSWALKS AND INTERSECTIONS.
 9. CONTRACTORS SHALL NOT PERFORM ANY WORK ON PRIVATE PROPERTY UNTIL A SIGNED RIGHT-OF-ENTRY IS RECEIVED BY DPW FROM THE PROPERTY THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE PROPERTY OWNER.
 10. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3'-0" WIDE SIDEWALK BETWEEN TREE PIT AND BACK OF SIDEWALK UNLESS SHOWN OTHERWISE. FOR NEW OR REPLACED GRASS STRIPS A MINIMUM OF 4'-0" WIDE SIDEWALK SHALL BE MAINTAINED BETWEEN THE EDGE OF GRASS STRIP AND BACK OF SIDEWALK UNLESS SHOWN OTHERWISE.
 11. ALL EXISTING TREES AND SHRUBS SHALL BE RETAINED UNLESS OTHERWISE NOTED. ALL EXISTING TREES SHALL BE PROTECTED DURING CONSTRUCTION, SEE SHEET C-2.5 FOR TREE PROTECTION.

CONTINUED ON SHEET C-3.2

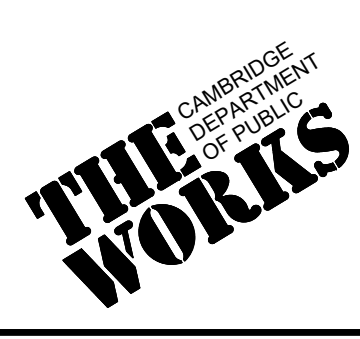


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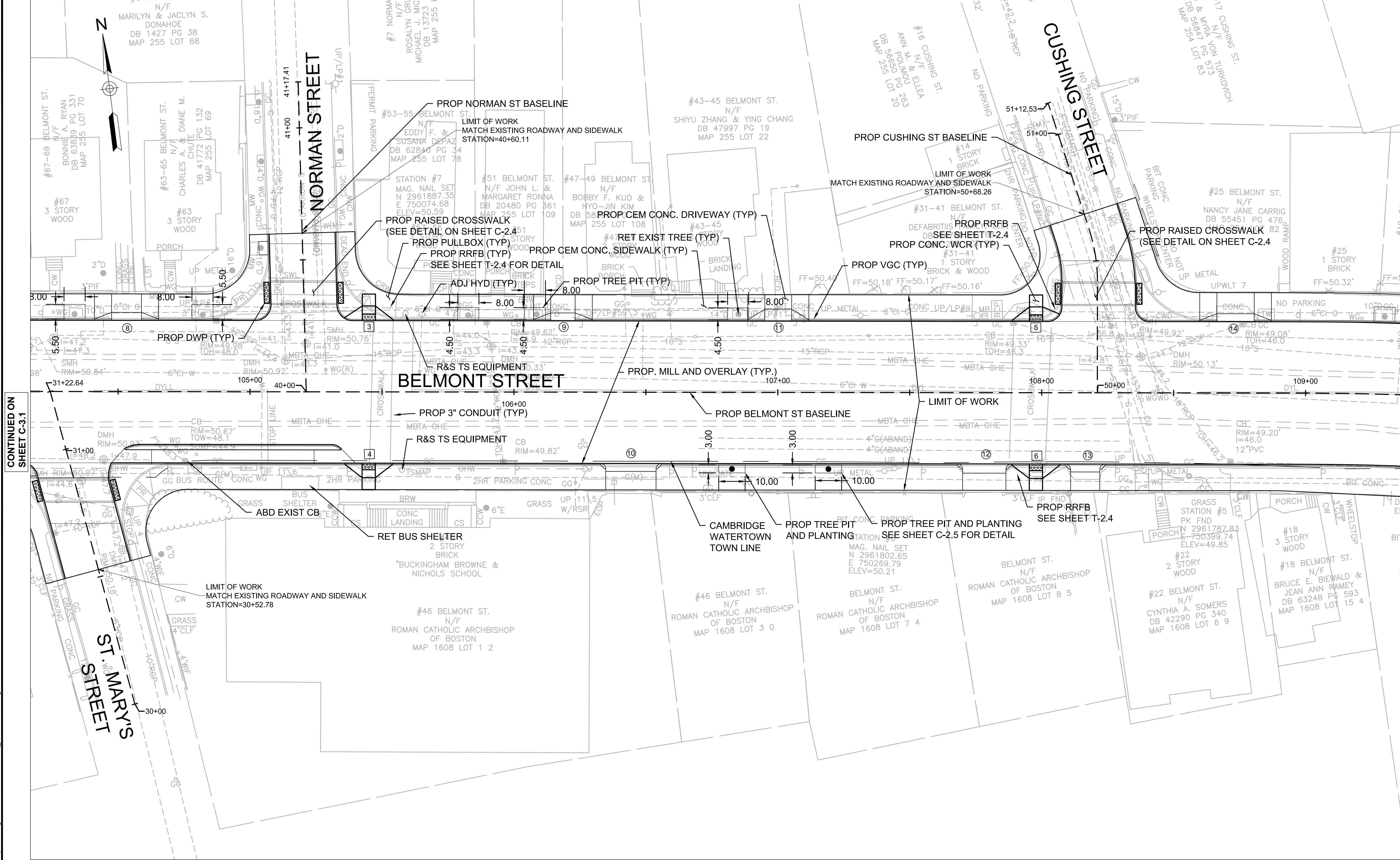


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Approved by	HJN		REVISIONS



Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	CONSTRUCTION PLAN 1

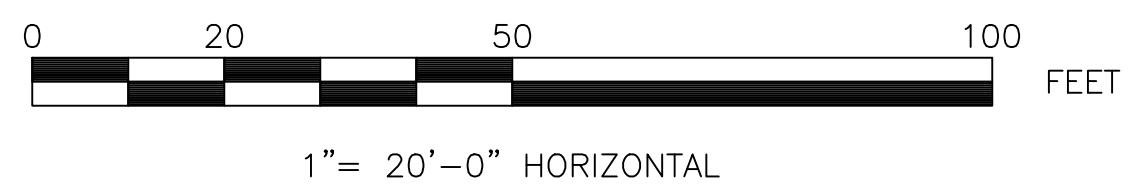
Sheet	C-3.1
File No.	



- NOTES:
- SEE SHEET C-1.1-C-1.2 FOR TYPICAL SECTIONS AND PAVEMENT NOTES.
 - SEE DETAILS ON SHEET C-2.4 FOR CURB INSTALLATION, AND SIDEWALK CONSTRUCTION DETAILS; SHEET C-6.0 FOR PEDESTRIAN RAMP DETAILS; AND SHEET C-7.0 DRIVEWAY DETAILS.
 - CONTRACTOR SHALL ADJUST EXISTING UTILITY COVERS AND CASTINGS TO RE-GRADED SURFACES. THE CONTRACTOR TO COORDINATE WITH RESPECTIVE UTILITIES COMPANIES FOR GAS/TELECOM/CABLE/ELECTRIC.
 - ALL VERTICAL GRANITE CURBING WITHIN WORK LIMITS SHALL BE REMOVED AND STORED FOR FUTURE RESET ON THE PROJECT, AS APPROVED BY THE ENGINEER. LOCATIONS FOR THE RESET CURBS SHALL BE APPROVED BY THE ENGINEER. ANY EXISTING GRANITE CURBS NOT RE-USED ON THE PROJECT SHALL BE SALVAGED AND DELIVERED TO A LOCATION DETERMINED BY THE CITY OF CAMBRIDGE PUBLIC WORKS DEPARTMENT.
 - ALL EXISTING FEATURES AT BACK OF SIDEWALK SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED. DAMAGES OR DISLODGING OF FEATURES AT BACK OF SIDEWALK SHALL BE REPAIRED/REPLACED AT NO ADDITIONAL COST TO THE PRIVATE PROPERTY OWNER OR OWNERS.
 - ALL EXISTING FEATURES WHICH ARE "TO REMAIN" AND WHICH ARE DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE, INCLUDING BUT NOT LIMITED TO EXISTING CURB, SIDEWALK, ROADWAY LIGHTING, BOUNDS OR PROPERTY MARKERS, HYDRANTS AND UTILITIES.
 - CONTRACTORS SHALL MATCH THE EXISTING GRADE AT THE LIMIT OF PROPOSED COLD PLANE AND OVERLAY. THE JOINT BETWEEN EXISTING AND PROPOSED PAVEMENT SHALL BE TREATED WITH INFRARED PAVEMENT SEALANT AND HOT POURED RUBBERIZED ASPHALT SEALER.
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 - CONTRACTORS SHALL NOT PERFORM ANY WORK ON PRIVATE PROPERTY UNTIL A SIGNED RIGHT-OF-ENTRY IS RECEIVED BY DPW FROM THE PROPERTY THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE PROPERTY OWNER.
 - CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3'-0" WIDE SIDEWALK BETWEEN TREE PIT AND BACK OF SIDEWALK UNLESS SHOWN OTHERWISE. FOR NEW OR REPLACED GRASS STRIPS A MINIMUM OF 4'-0" WIDE SIDEWALK SHALL BE MAINTAINED BETWEEN THE EDGE OF GRASS STRIP AND BACK OF SIDEWALK UNLESS SHOWN OTHERWISE.
 - ALL EXISTING TREES AND SHRUBS SHALL BE RETAINED UNLESS OTHERWISE NOTED. ALL EXISTING TREES SHALL BE PROTECTED DURING CONSTRUCTION, SEE SHEET C-2.5 FOR TREE PROTECTION.

CONTINUED ON SHEET C-3.1

CONTINUED ON SHEET C-3.3



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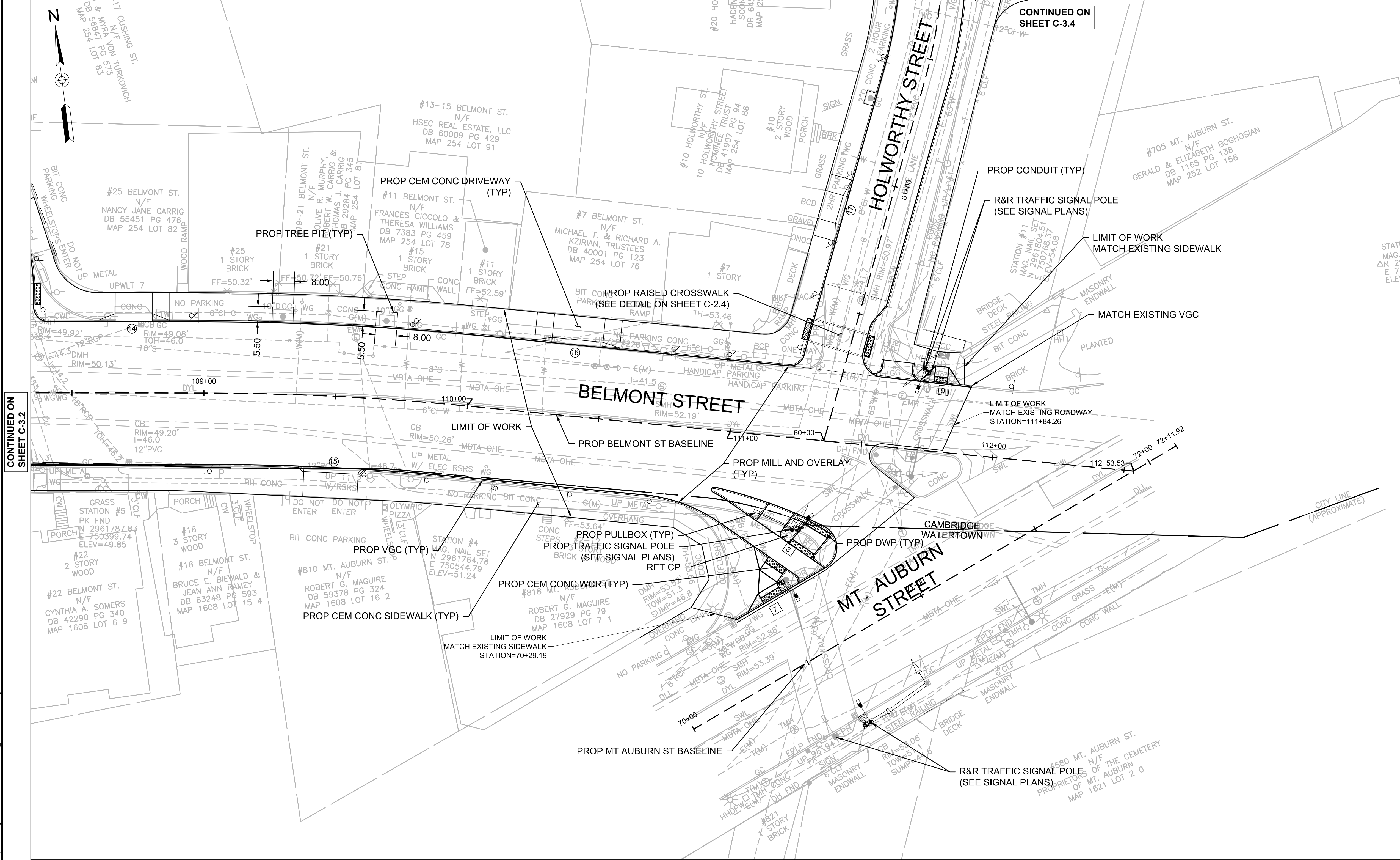


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Date	MARCH 2022			
Job No.				
Designed by	JCD			
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Checked by	HJN	No.	Description	Date
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Client	CITY OF CAMBRIDGE, MA	Sheet	C-3.2
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CONSTRUCTION PLAN 2		

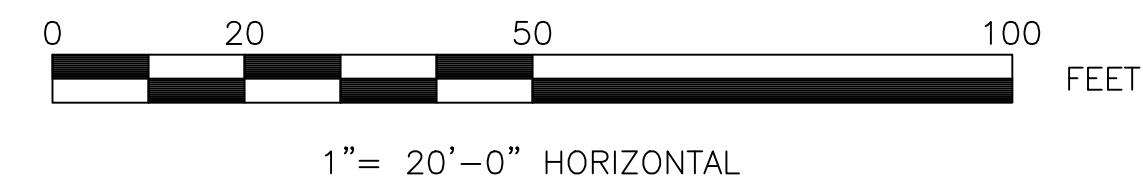
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CONTINUED ON SHEET C-3.4

CONTINUED ON SHEET C-3.2

- NOTES:
- SEE SHEET C-1.1-C-1.2 FOR TYPICAL SECTIONS AND PAVEMENT NOTES.
 - SEE DETAILS ON SHEET C-2.4 FOR CURB INSTALLATION, AND SIDEWALK CONSTRUCTION DETAILS; SHEET C-6.0 FOR PEDESTRIAN RAMP DETAILS; AND SHEET C-7.0 DRIVEWAY DETAILS.
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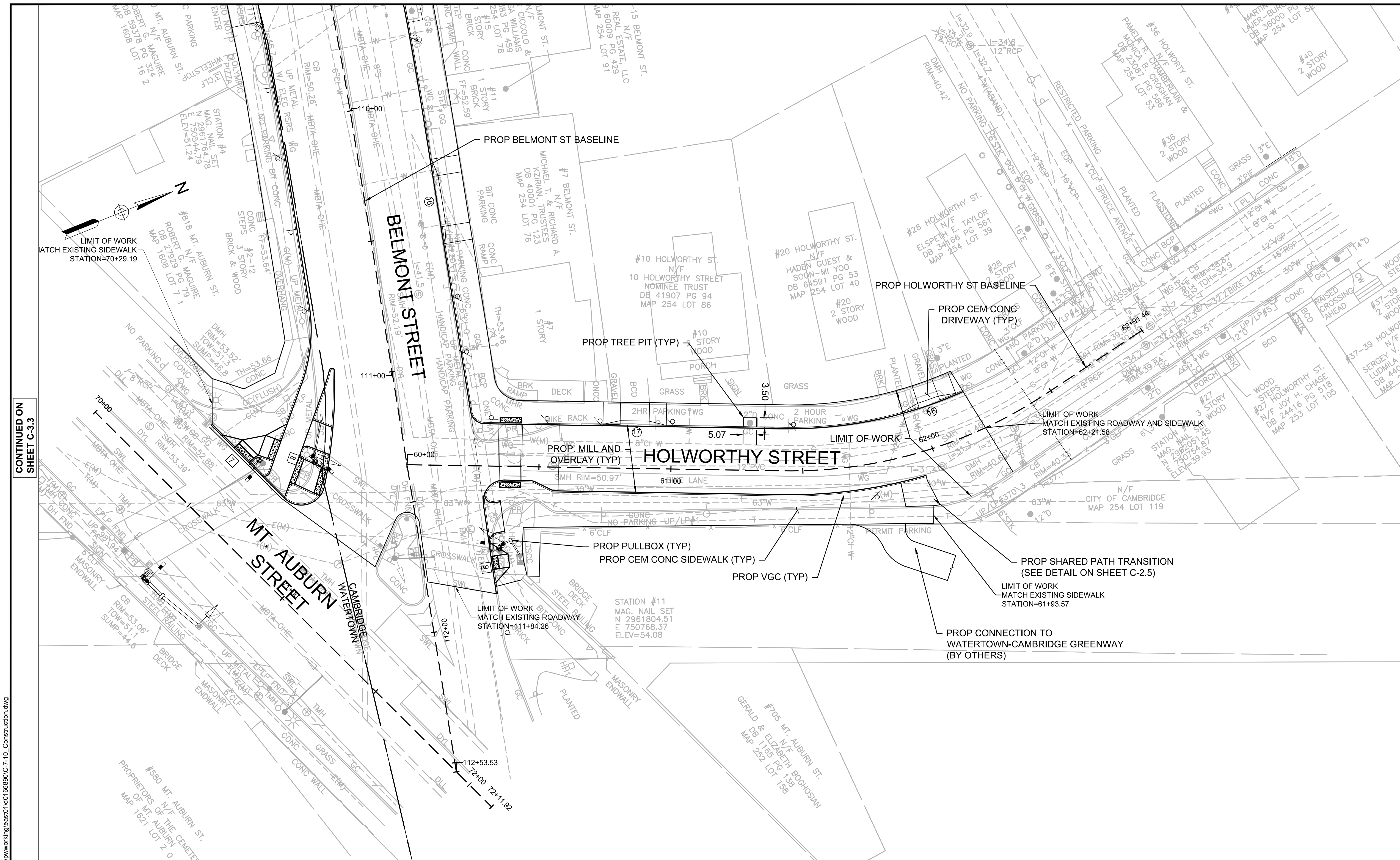


Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
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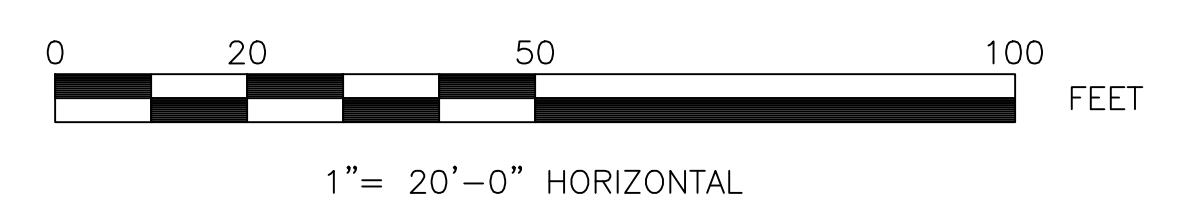
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Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CONSTRUCTION PLAN 3		

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- NOTES:
- SEE SHEET C-1.1-C-1.2 FOR TYPICAL SECTIONS AND PAVEMENT NOTES.
 - SEE DETAILS ON SHEET C-2.4 FOR CURB INSTALLATION, AND SIDEWALK CONSTRUCTION DETAILS; SHEET C-6.0 FOR PEDESTRIAN RAMP DETAILS; AND SHEET C-7.0 DRIVEWAY DETAILS.
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CONTINUED ON SHEET C-3.3



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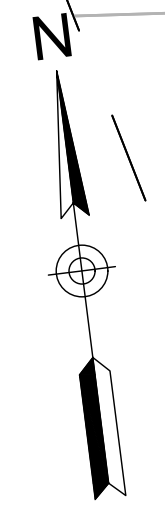
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Date	MARCH 2022			
Job No.				
Designed by	JCD			
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Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	





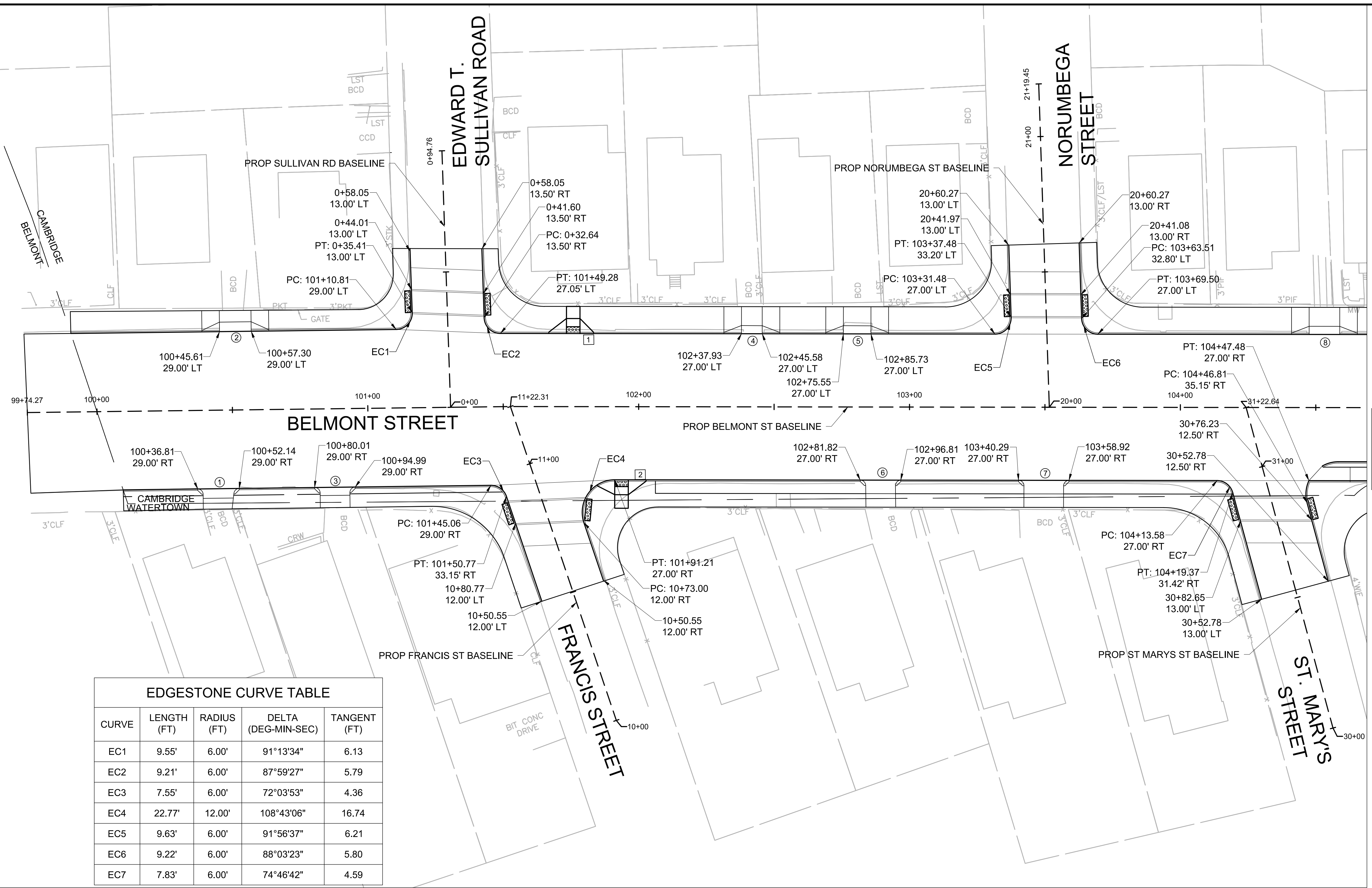
Client	CITY OF CAMBRIDGE, MA	Sheet	C-3.4
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CONSTRUCTION PLAN 4		



NOTES:
 1. ALL BASELINE TIES FOR CURB CORNERS AND RADII ARE TO THE P.C.'S OR P.T.'S UNLESS OTHERWISE NOTED. WHERE PROPOSED GRANITE CURBING MEETS EXISTING CURBING OR EXISTING ROADWAY OR DRIVEWAY PAVEMENT EDGES, MINOR FIELD ADJUSTMENTS TO THE DESIGNATED STATION OF THE P.C. OR P.T. FOR THE PROPOSED CURBING AND ELEVATION MAY BE REQUIRED.

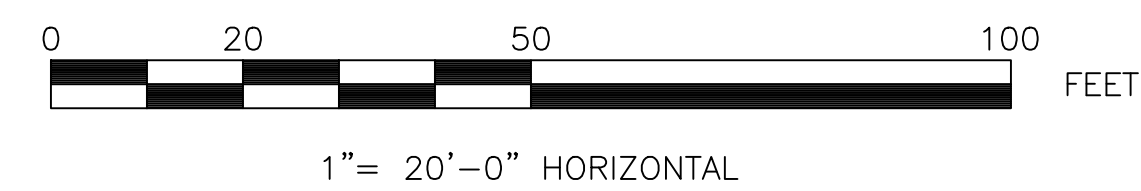
LEGEND

-  = PEDESTRIAN RAMP (SEE SHEET C-6.0)
-  = DRIVEWAY (SEE SHEET C-7.0)



EDGESTONE CURVE TABLE

CURVE	LENGTH (FT)	RADIUS (FT)	DELTA (DEG-MIN-SEC)	TANGENT (FT)
EC1	9.55'	6.00'	91°13'34"	6.13
EC2	9.21'	6.00'	87°59'27"	5.79
EC3	7.55'	6.00'	72°03'53"	4.36
EC4	22.77'	12.00'	108°43'06"	16.74
EC5	9.63'	6.00'	91°56'37"	6.21
EC6	9.22'	6.00'	88°03'23"	5.80
EC7	7.83'	6.00'	74°46'42"	4.59

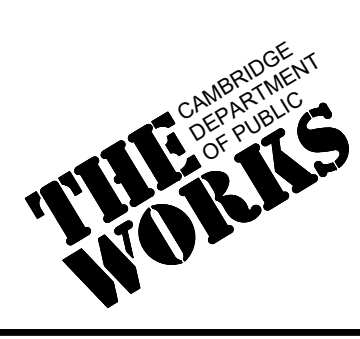


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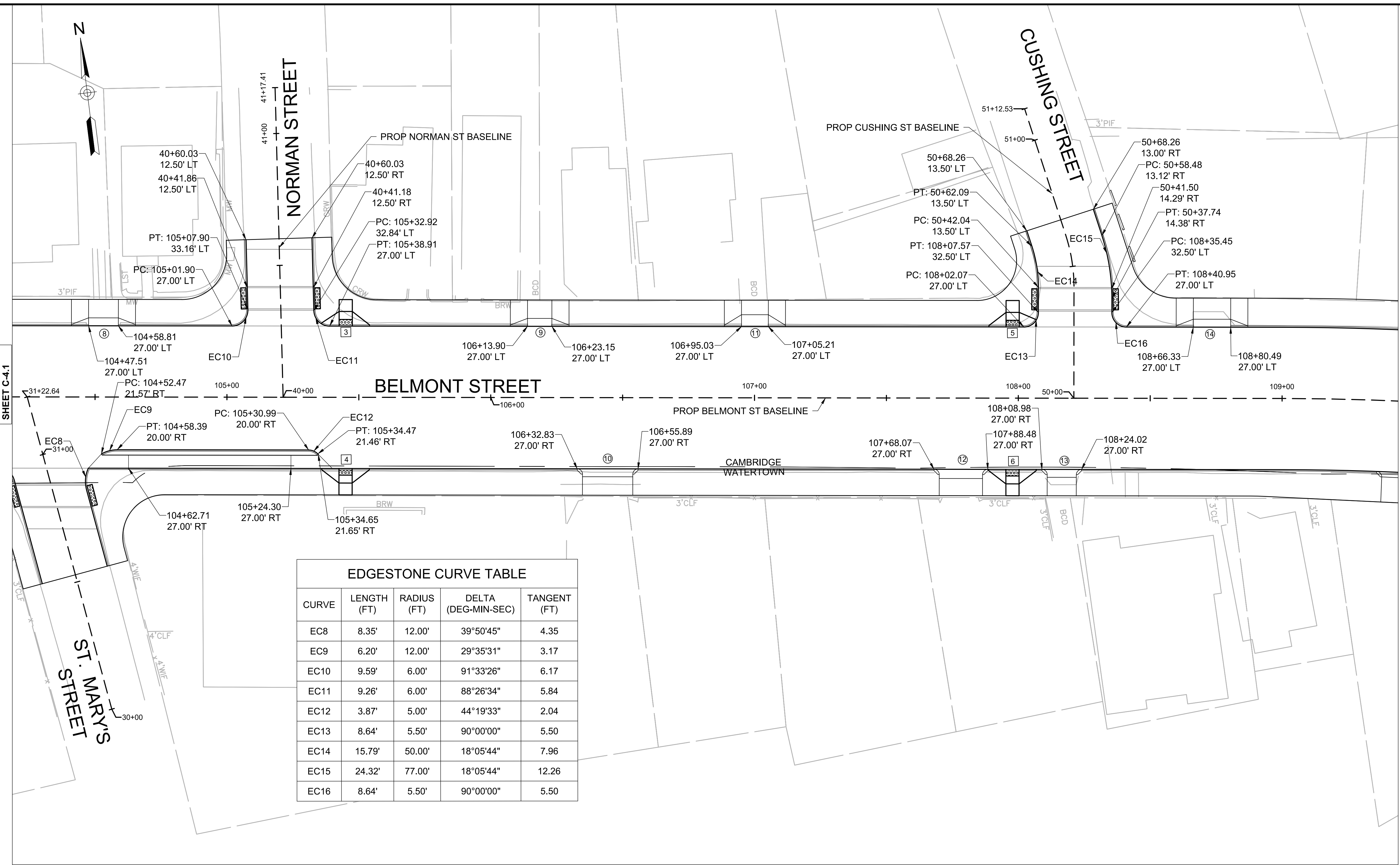


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Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	



Client	CITY OF CAMBRIDGE, MA	Sheet	C-4.1
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CURB TIE AND ALIGNMENT PLAN 1		

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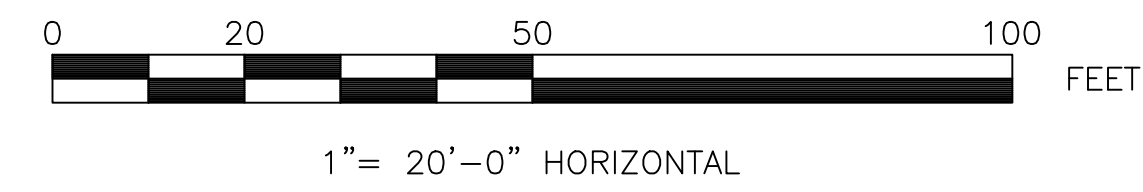


NOTES:
 1. ALL BASELINE TIES FOR CURB CORNERS AND RADII ARE TO THE P.C.'S OR P.T.'S UNLESS OTHERWISE NOTED. WHERE PROPOSED GRANITE CURBING MEETS EXISTING CURBING OR EXISTING ROADWAY OR DRIVEWAY PAVEMENT EDGES, MINOR FIELD ADJUSTMENTS TO THE DESIGNATED STATION OF THE P.C. OR P.T. FOR THE PROPOSED CURBING AND ELEVATION MAY BE REQUIRED.

LEGEND

- X = PEDESTRIAN RAMP (SEE SHEET C-6.0)
- XX = DRIVEWAY (SEE SHEET C-7.0)

EDGESTONE CURVE TABLE				
CURVE	LENGTH (FT)	RADIUS (FT)	DELTA (DEG-MIN-SEC)	TANGENT (FT)
EC8	8.35'	12.00'	39°50'45"	4.35
EC9	6.20'	12.00'	29°35'31"	3.17
EC10	9.59'	6.00'	91°33'26"	6.17
EC11	9.26'	6.00'	88°26'34"	5.84
EC12	3.87'	5.00'	44°19'33"	2.04
EC13	8.64'	5.50'	90°00'00"	5.50
EC14	15.79'	50.00'	18°05'44"	7.96
EC15	24.32'	77.00'	18°05'44"	12.26
EC16	8.64'	5.50'	90°00'00"	5.50



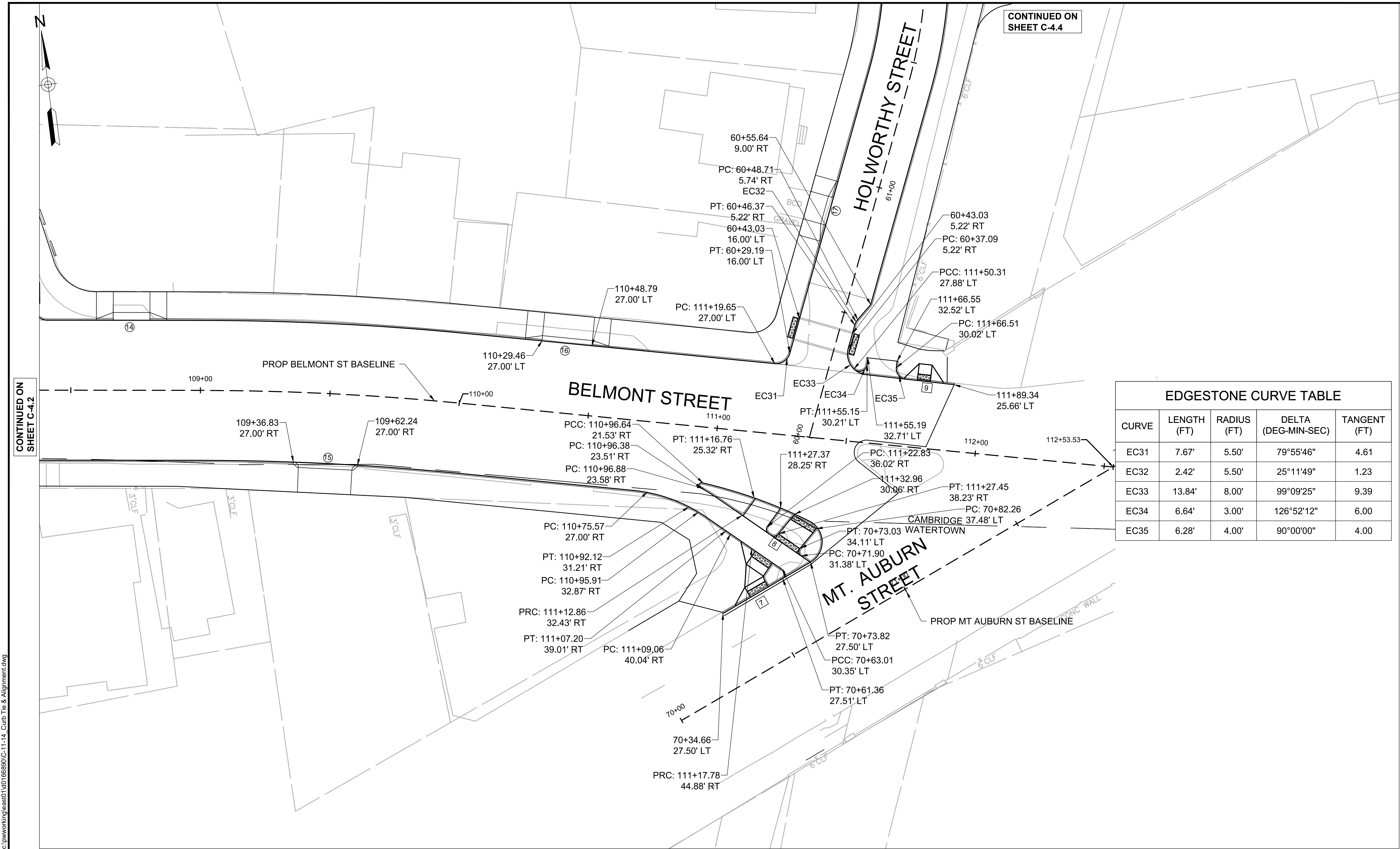
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Date	MARCH 2022		
Job No.			
Designed by	JCD		
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Approved by	HJN		Date
			REVISIONS



Client	CITY OF CAMBRIDGE, MA	Sheet	C-4.2
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CURB TIE AND ALIGNMENT PLAN 2		



CONTINUED ON SHEET C-4.4

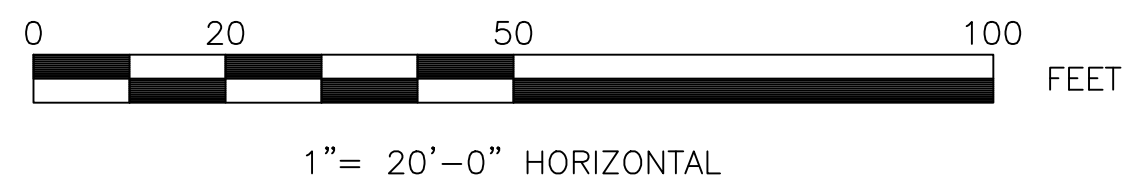
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NOTES:
 1. ALL BASELINE TIES FOR CURB CORNERS AND RADII ARE TO THE P.C.'S OR P.T.'S UNLESS OTHERWISE NOTED. WHERE PROPOSED GRANITE CURBING MEETS EXISTING CURBING OR EXISTING ROADWAY OR DRIVEWAY PAVEMENT EDGES, MINOR FIELD ADJUSTMENTS TO THE DESIGNATED STATION OF THE P.C. OR P.T. FOR THE PROPOSED CURBING AND ELEVATION MAY BE REQUIRED.

LEGEND

- = PEDESTRIAN RAMP (SEE SHEET C-6.0)
- = DRIVEWAY (SEE SHEET C-7.0)

CURVE	LENGTH (FT)	RADIUS (FT)	DELTA (DEG-MIN-SEC)	TANGENT (FT)
EC31	7.67'	5.50'	79°55'46"	4.61
EC32	2.42'	5.50'	25°11'49"	1.23
EC33	13.84'	8.00'	99°09'25"	9.39
EC34	6.64'	3.00'	126°52'12"	6.00
EC35	6.28'	4.00'	90°00'00"	4.00



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Date	MARCH 2022			
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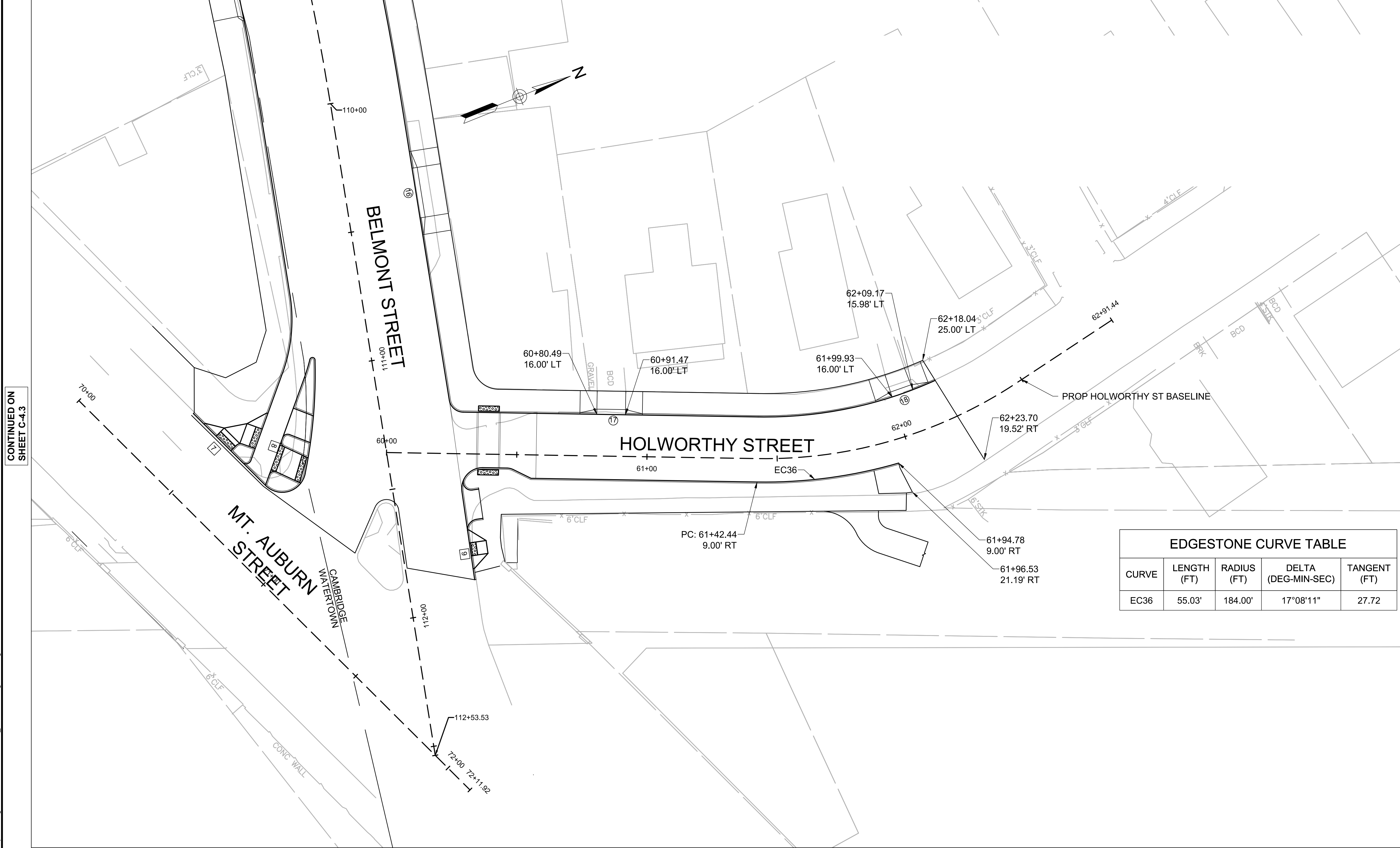


Client	CITY OF CAMBRIDGE, MA	Sheet	C-4.3
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CURB TIE AND ALIGNMENT PLAN 3		

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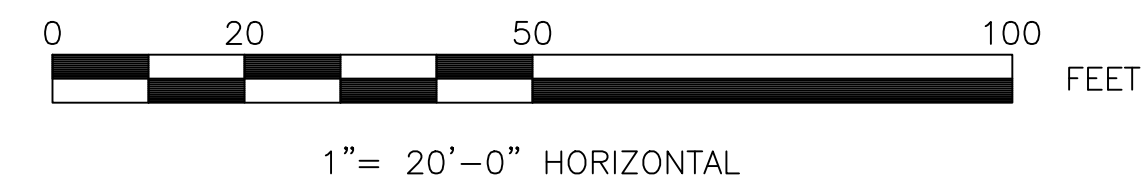
LEGEND

-  = PEDESTRIAN RAMP (SEE SHEET C-6.0)
-  = DRIVEWAY (SEE SHEET C-7.0)



EDGESTONE CURVE TABLE

CURVE	LENGTH (FT)	RADIUS (FT)	DELTA (DEG-MIN-SEC)	TANGENT (FT)
EC36	55.03'	184.00'	17°08'11"	27.72

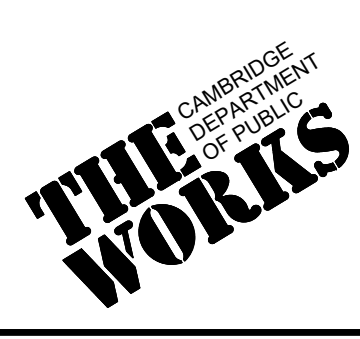


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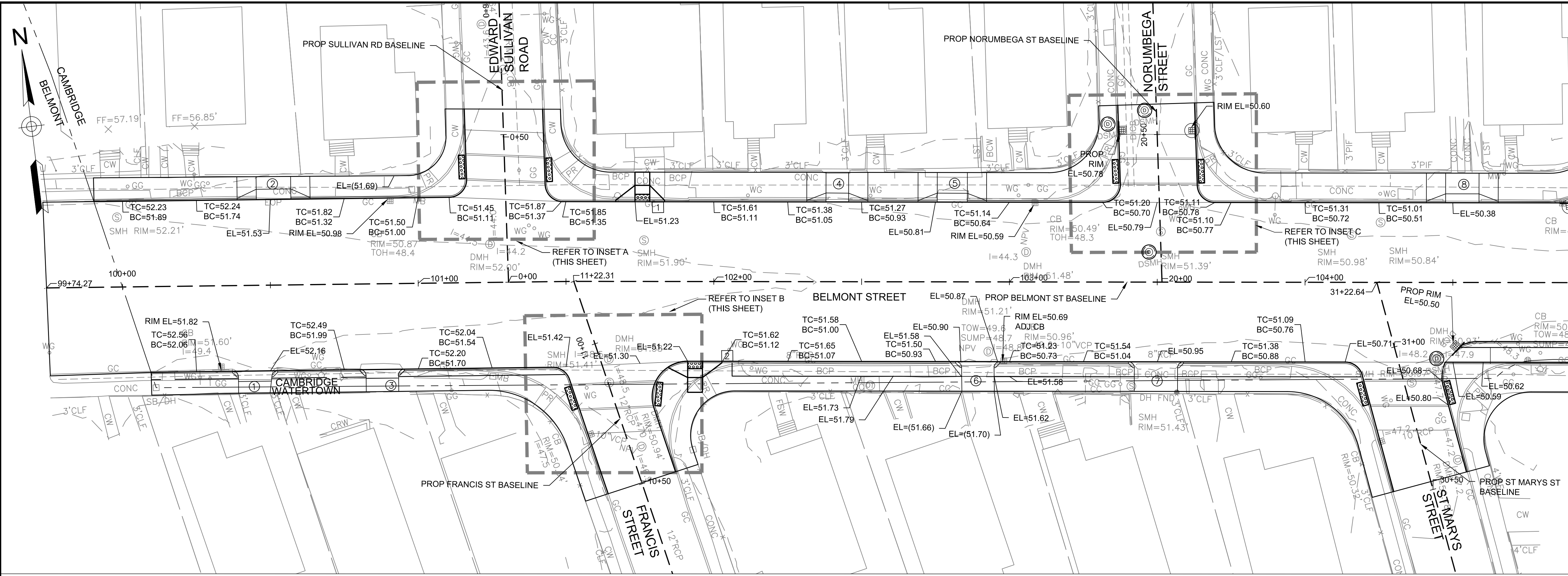


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Scale	AS NOTED			
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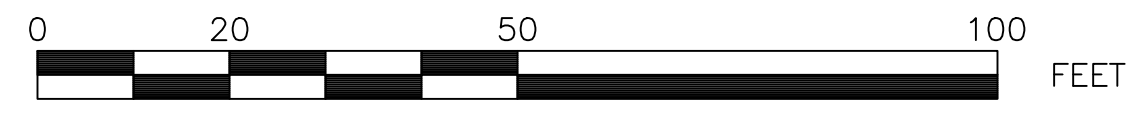
Client	CITY OF CAMBRIDGE, MA	Sheet	C-4.4
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CURB TIE AND ALIGNMENT PLAN 4		



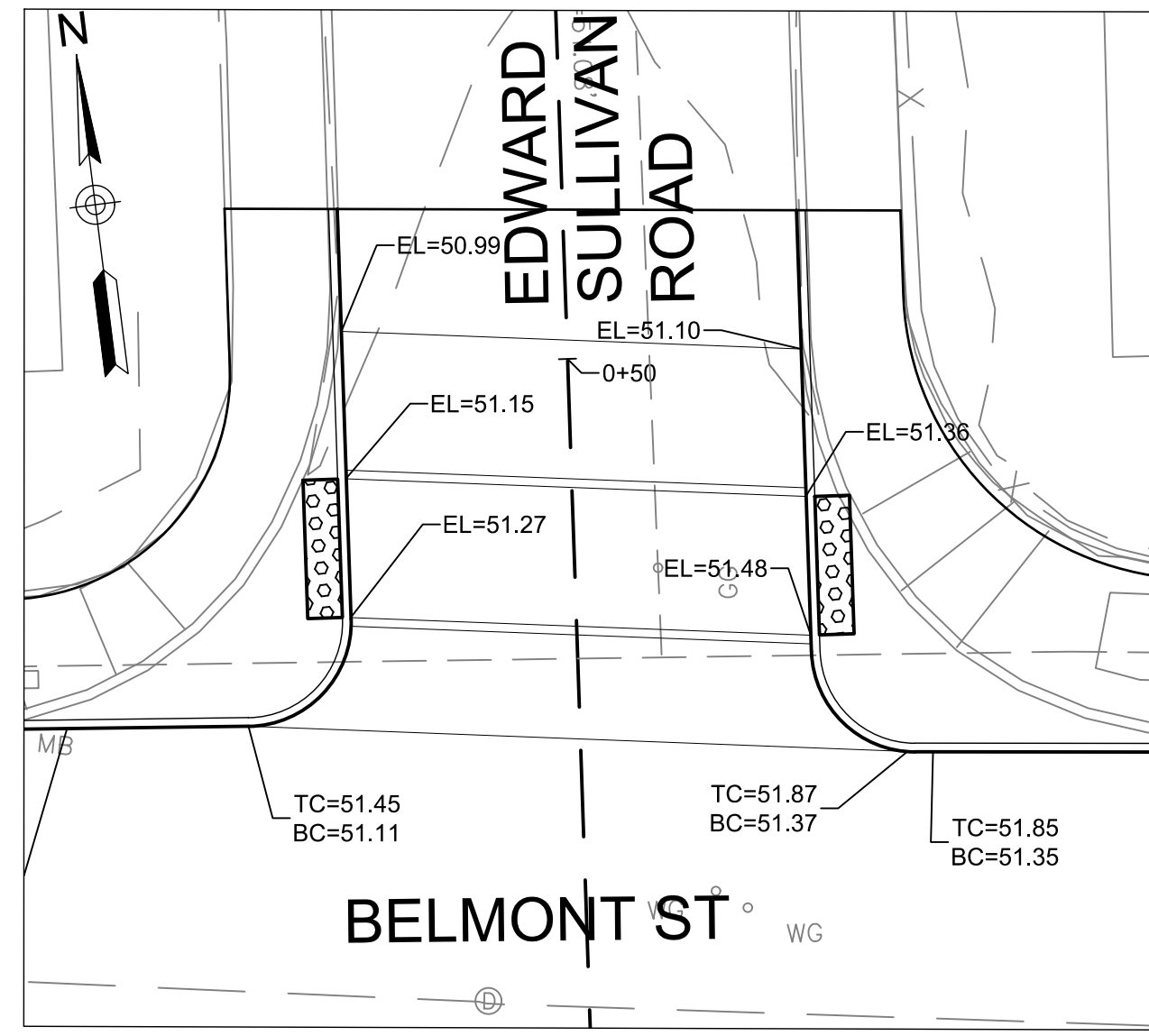
NOTES:

- UNLESS OTHERWISE NOTED, CONTRACTOR SHALL MATCH EXISTING BACK OF SIDEWALK GRADE.

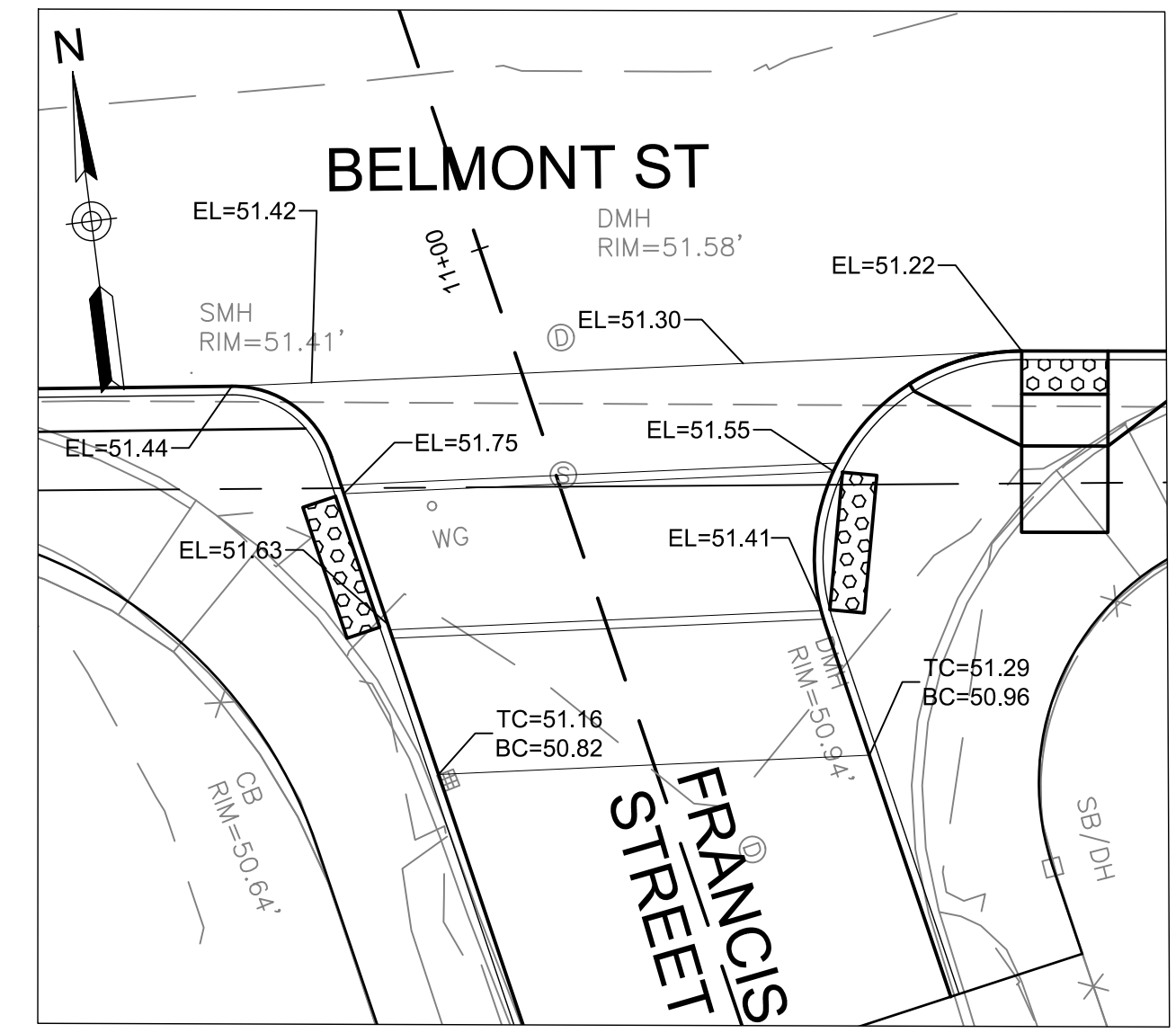
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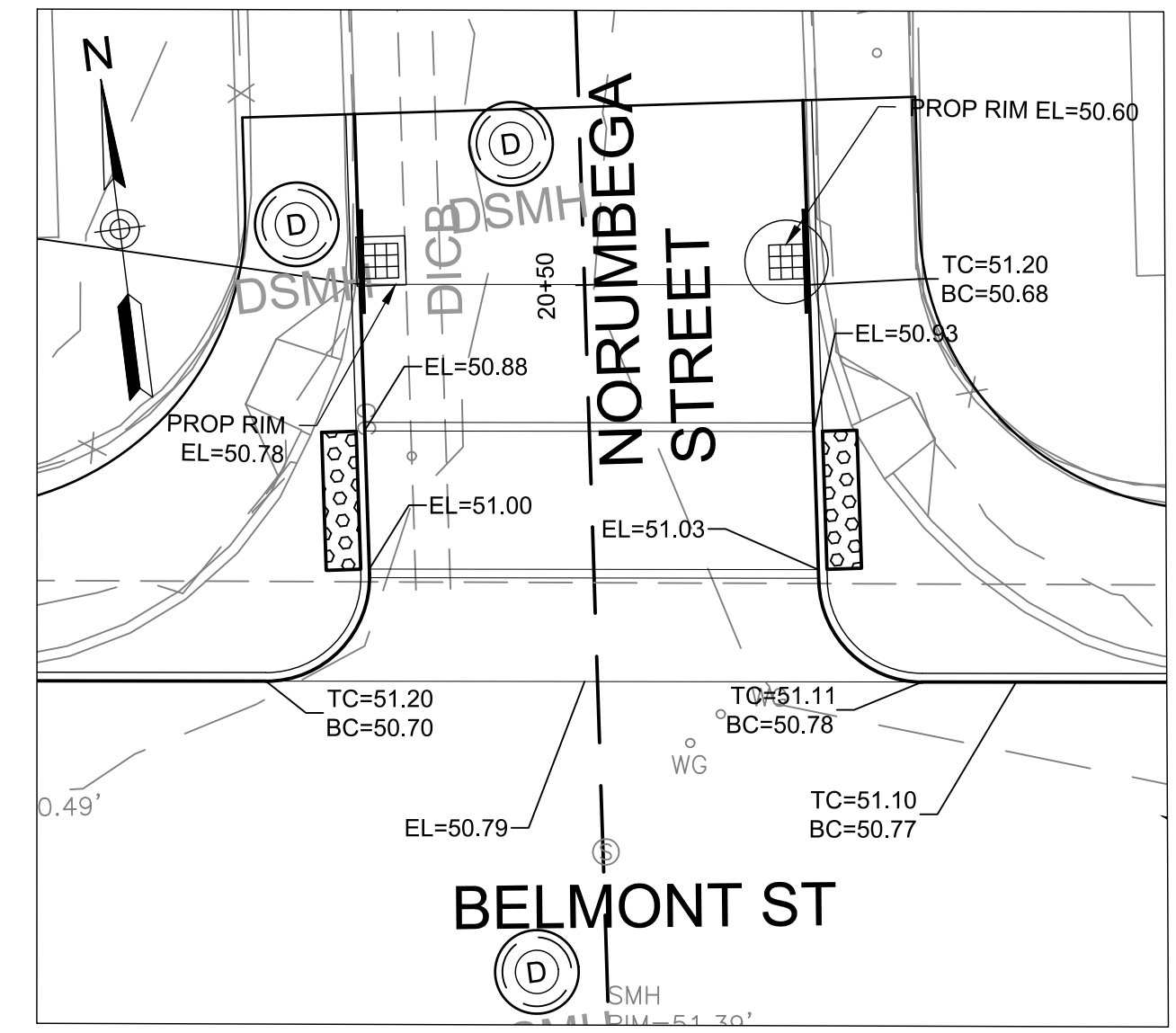
1" = 20'-0" HORIZONTAL



INSET DETAIL A
SCALE: 1" = 10'



INSET DETAIL B
SCALE: 1" = 10'



INSET DETAIL C
SCALE: 1" = 10'

LEGEND

- 22.22 --- EXIST. CONTOURS
- EL=(12.34) EXIST. ELEVATION
- EL=12.34 PROP. ELEVATION
- TC=12.34 PROP. TOP OF CURB ELEVATION
- BC=12.34 PROP. BOTTOM OF CURB ELEVATION
- --- INSET OF RAMP GRADING

PLOT DATE=3/25/2022 10:09:21 AM USER=DAVIS_JACQUELINE FILENAME=c:\pwworking\cas01\10168890\C-15-18_Grading.dwg

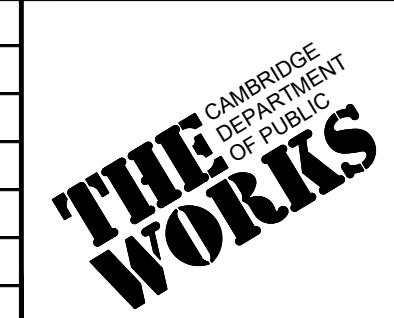


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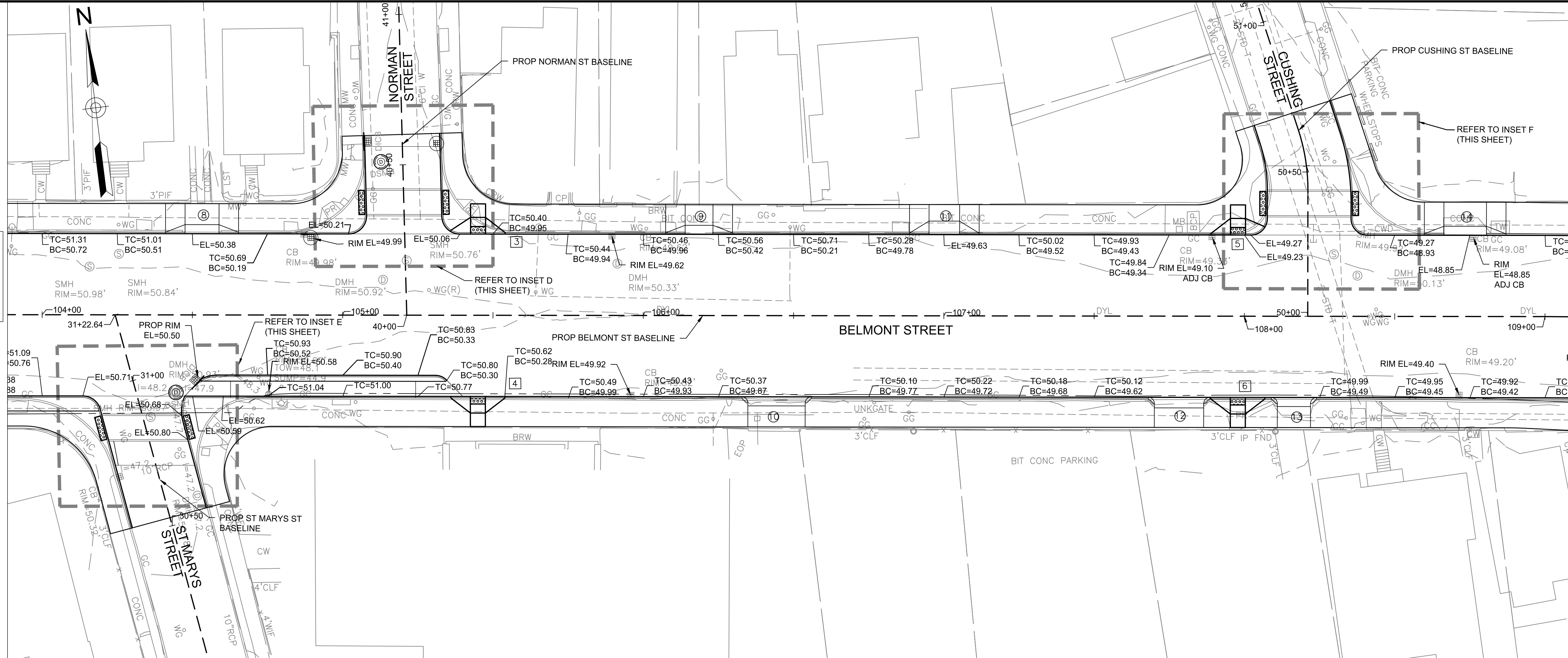


Hugh J. Neenan
04-04-22

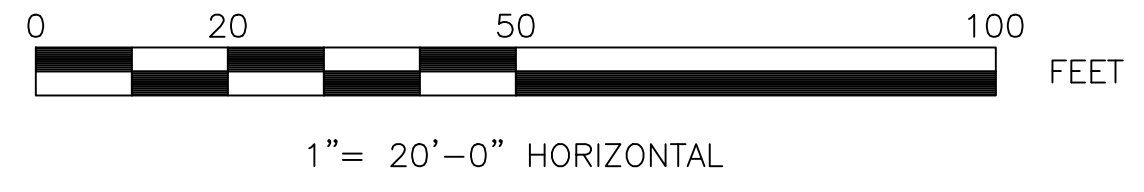
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Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	



Client	CITY OF CAMBRIDGE, MA	Sheet	C-5.1
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	GRADING PLAN 1		

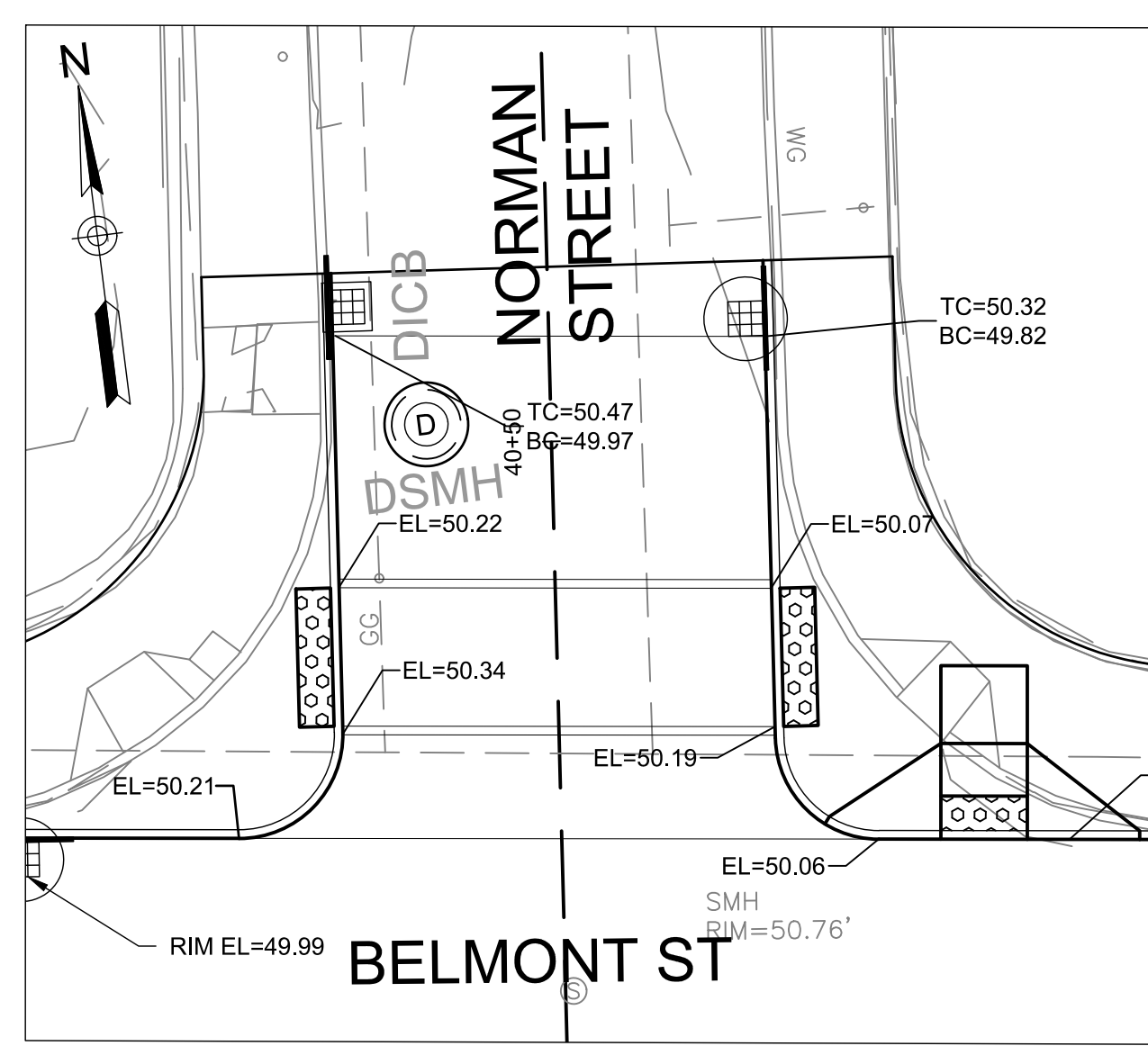


NOTES:
 1. UNLESS OTHERWISE NOTED, CONTRACTOR SHALL MATCH EXISTING BACK OF SIDEWALK GRADE.

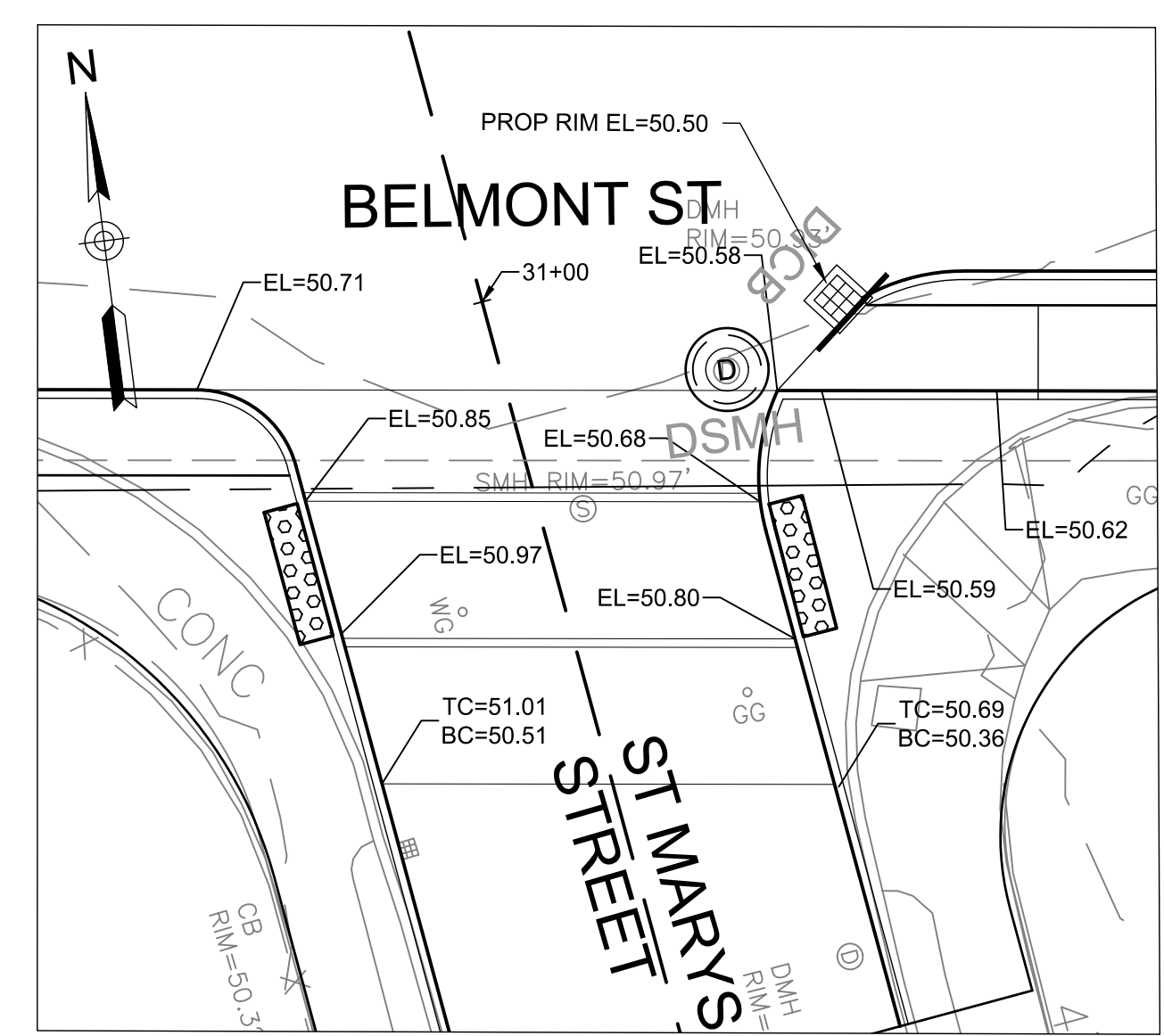


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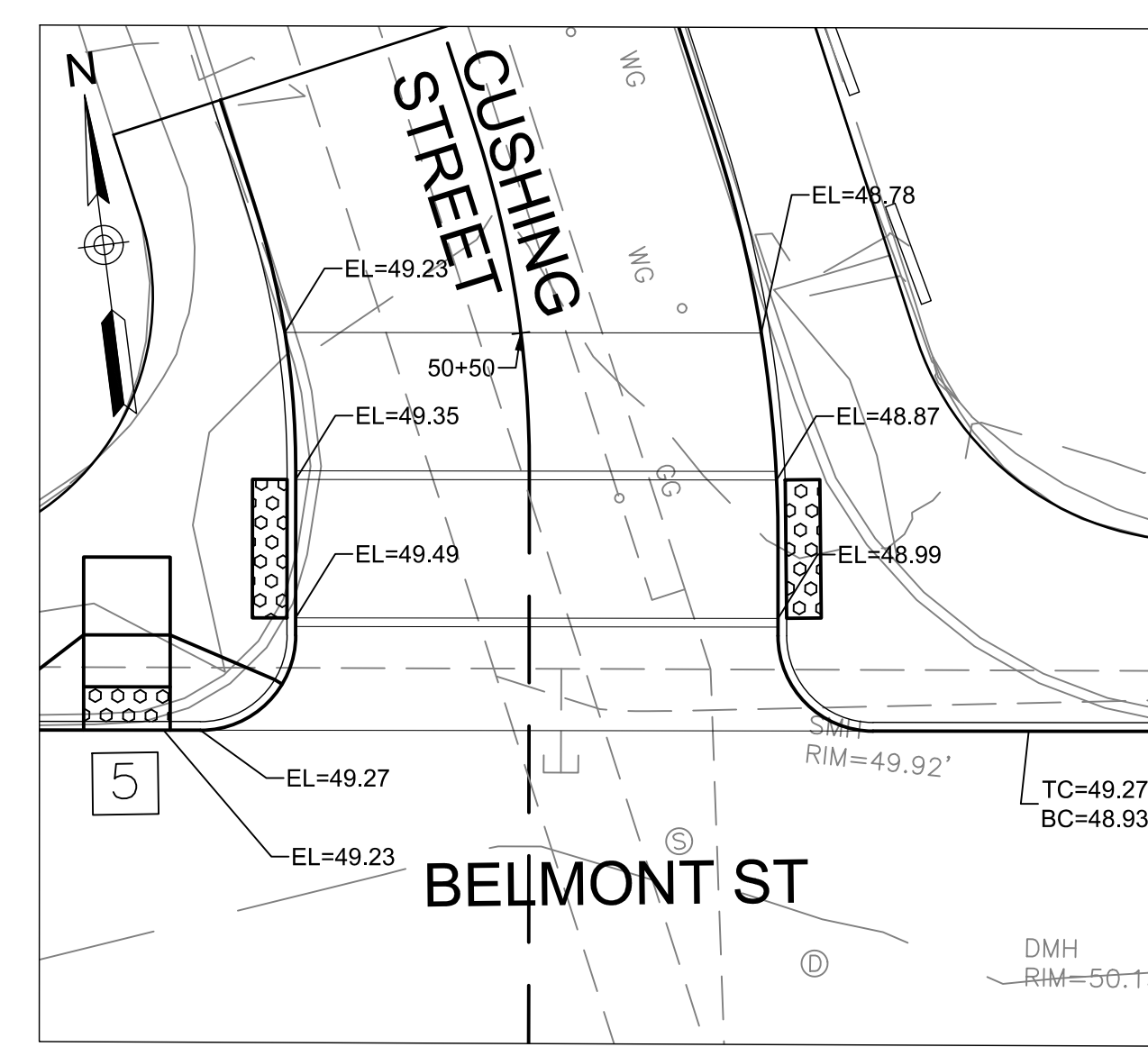
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INSET DETAIL D
SCALE: 1" = 10'



INSET DETAIL E
SCALE: 1" = 10'



INSET DETAIL F
SCALE: 1" = 10'

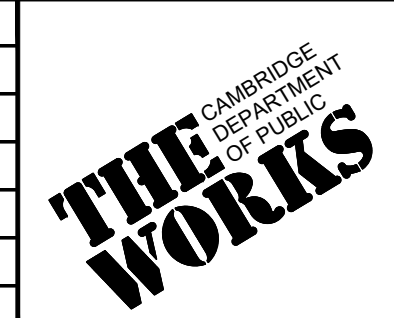
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---	22.22	---	EXIST. CONTOURS
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EL=12.34		---	PROP. ELEVATION
TC=12.34		---	PROP. TOP OF CURB ELEVATION
BC=12.34		---	PROP. BOTTOM OF CURB ELEVATION
---		---	INSET OF RAMP GRADING

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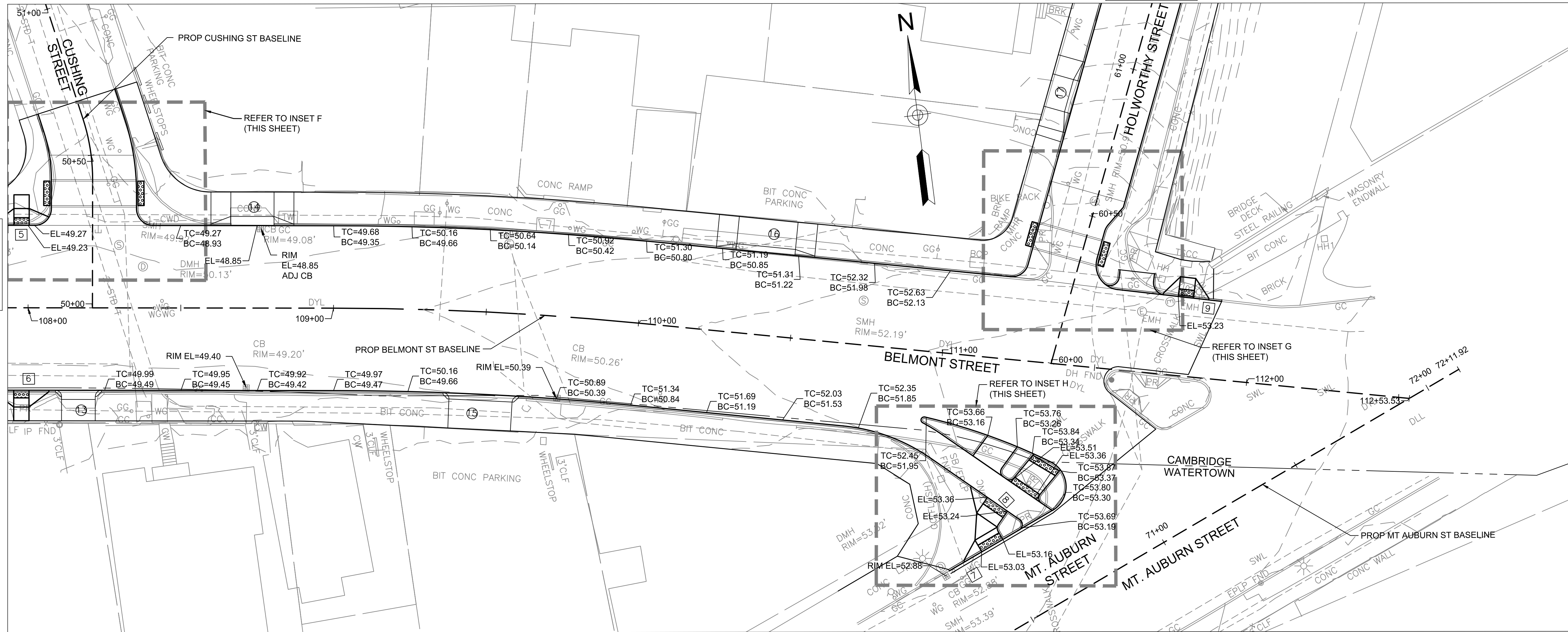
Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	



Client	CITY OF CAMBRIDGE, MA	Sheet	C-5.2
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	GRADING PLAN 2		

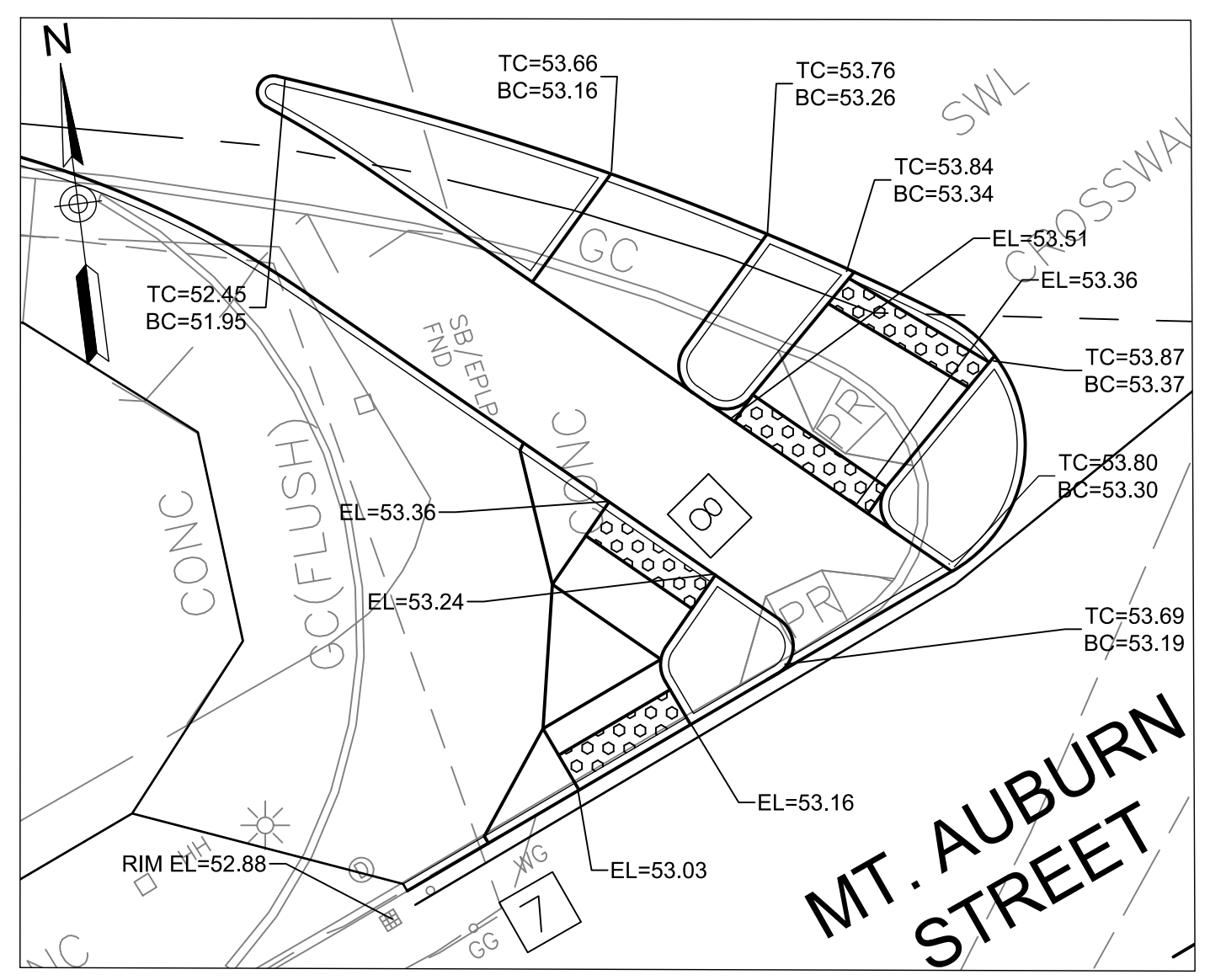
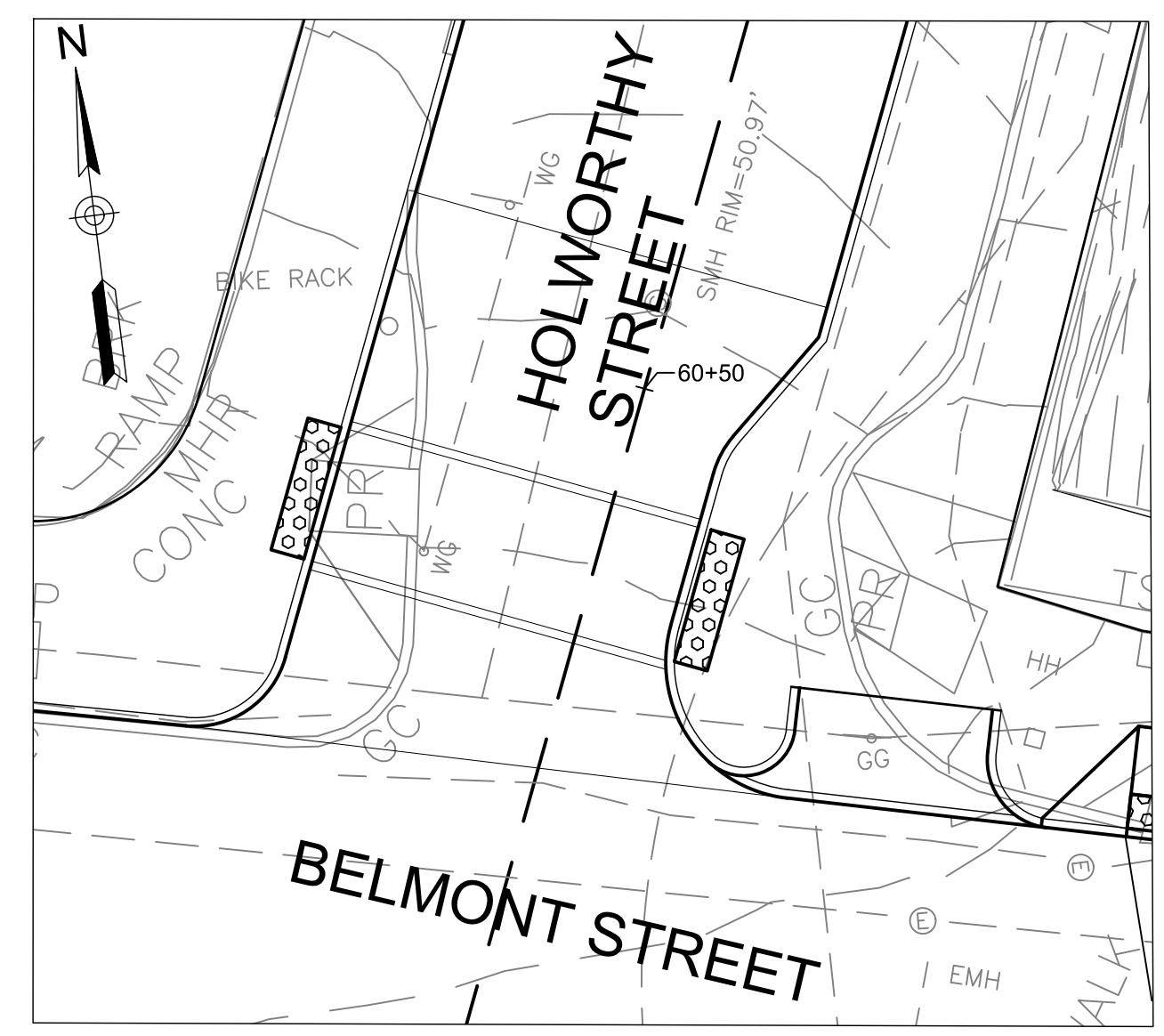
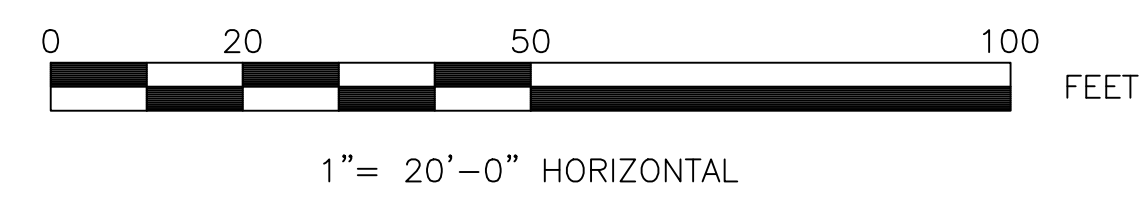
CONTINUED ON SHEET C-5.2

CONTINUED ON SHEET C-5.4



NOTES:

- UNLESS OTHERWISE NOTED, CONTRACTOR SHALL MATCH EXISTING BACK OF SIDEWALK GRADE.



LEGEND

---	22.22	---	EXIST. CONTOURS
EL=(12.34)	---	---	EXIST. ELEVATION
EL=12.34	---	---	PROP. ELEVATION
TC=12.34	---	---	PROP. TOP OF CURB ELEVATION
BC=12.34	---	---	PROP. BOTTOM OF CURB ELEVATION
---	---	---	INSET OF RAMP GRADING

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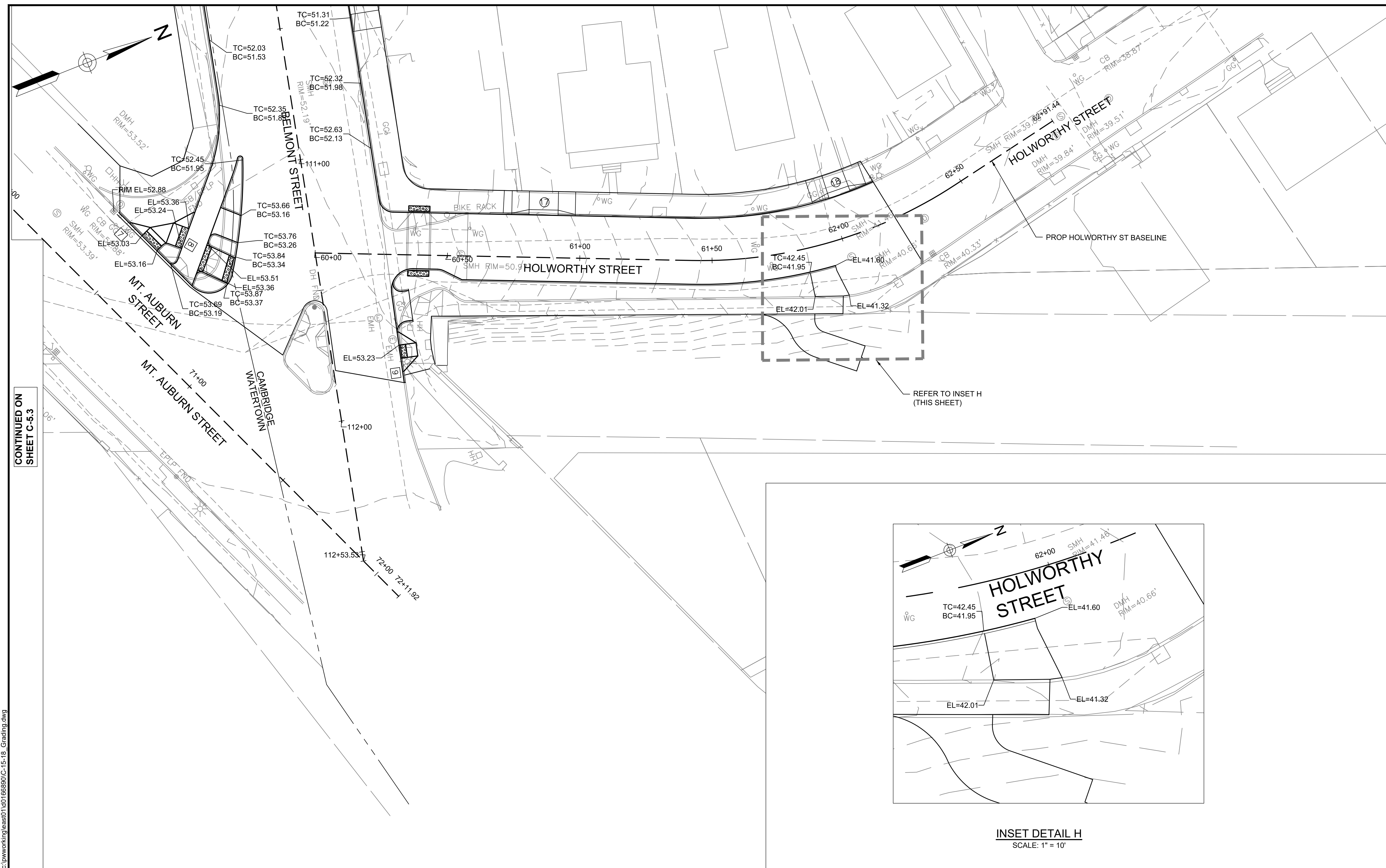
HDR
HDR ENGINEERING, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MASSACHUSETTS 02110-2378
(617) 357-7700



Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	

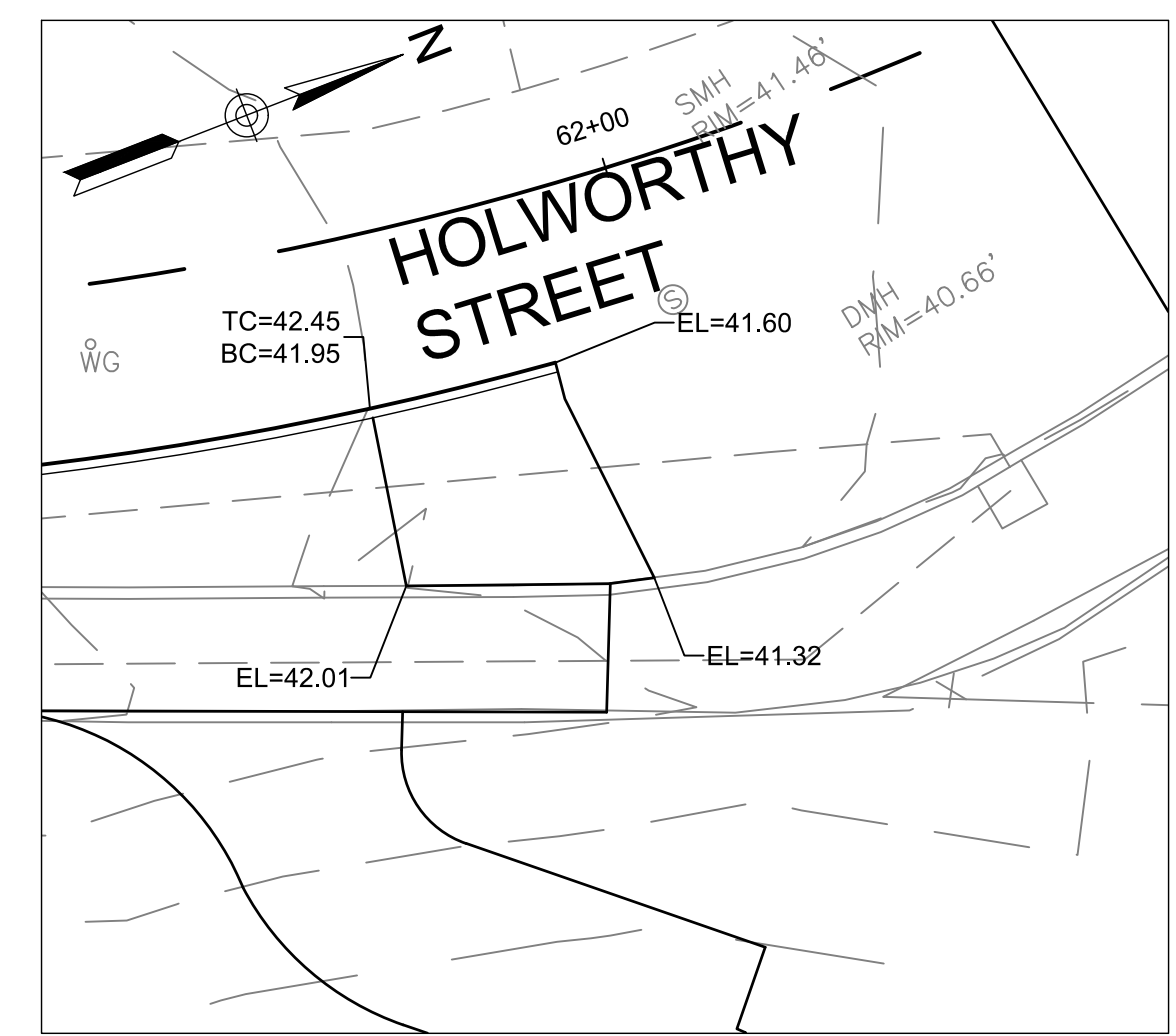


Client	CITY OF CAMBRIDGE, MA	Sheet	C-5.3
Project	BELMONT & HOLWORTH STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	GRADING PLAN 3		

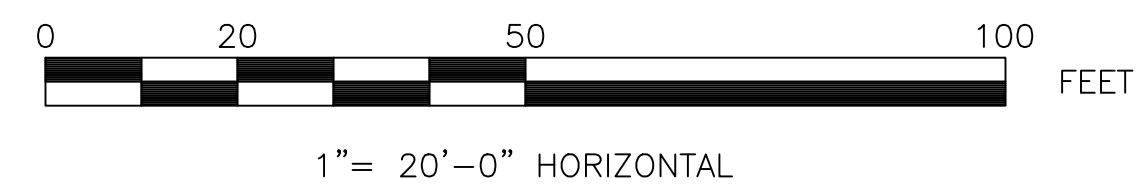


NOTES:
 1. UNLESS OTHERWISE NOTED, CONTRACTOR SHALL MATCH EXISTING BACK OF SIDEWALK GRADE.

CONTINUED ON SHEET C-5-3



INSET DETAIL H
 SCALE: 1" = 10'

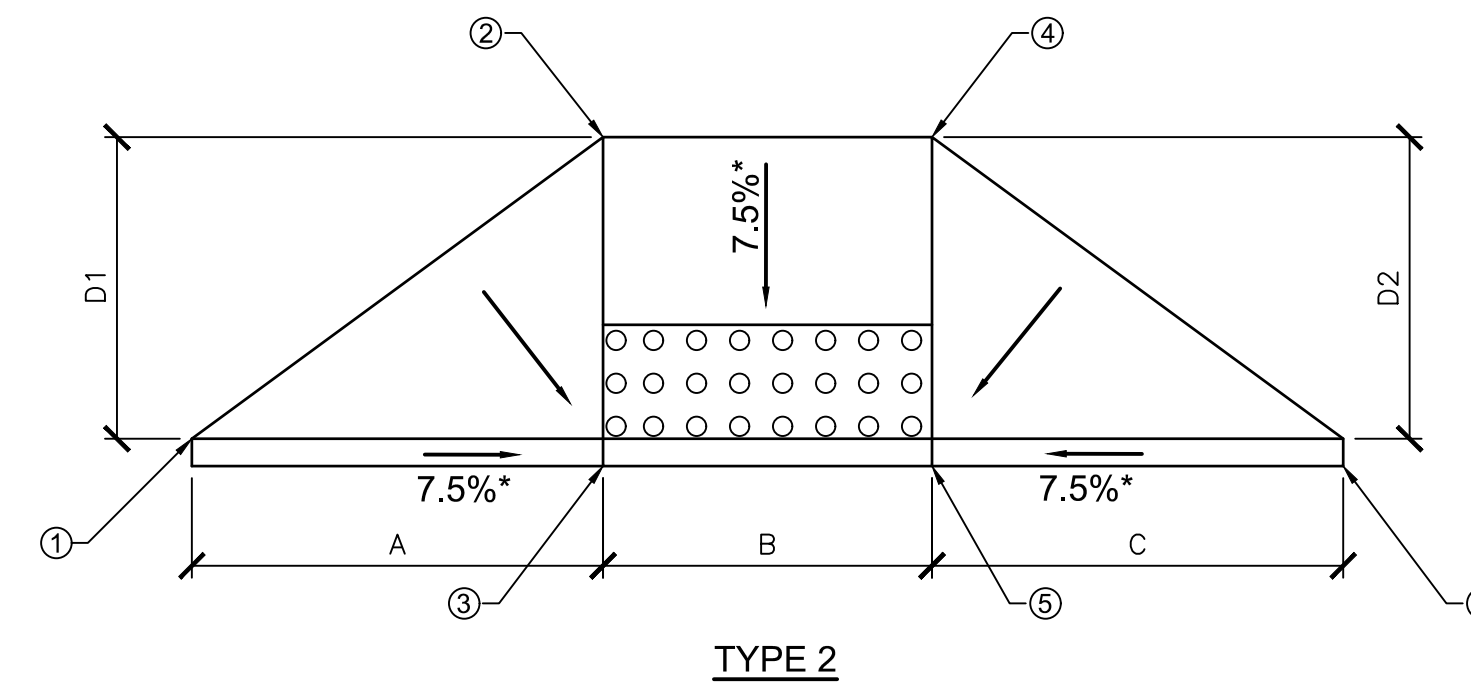
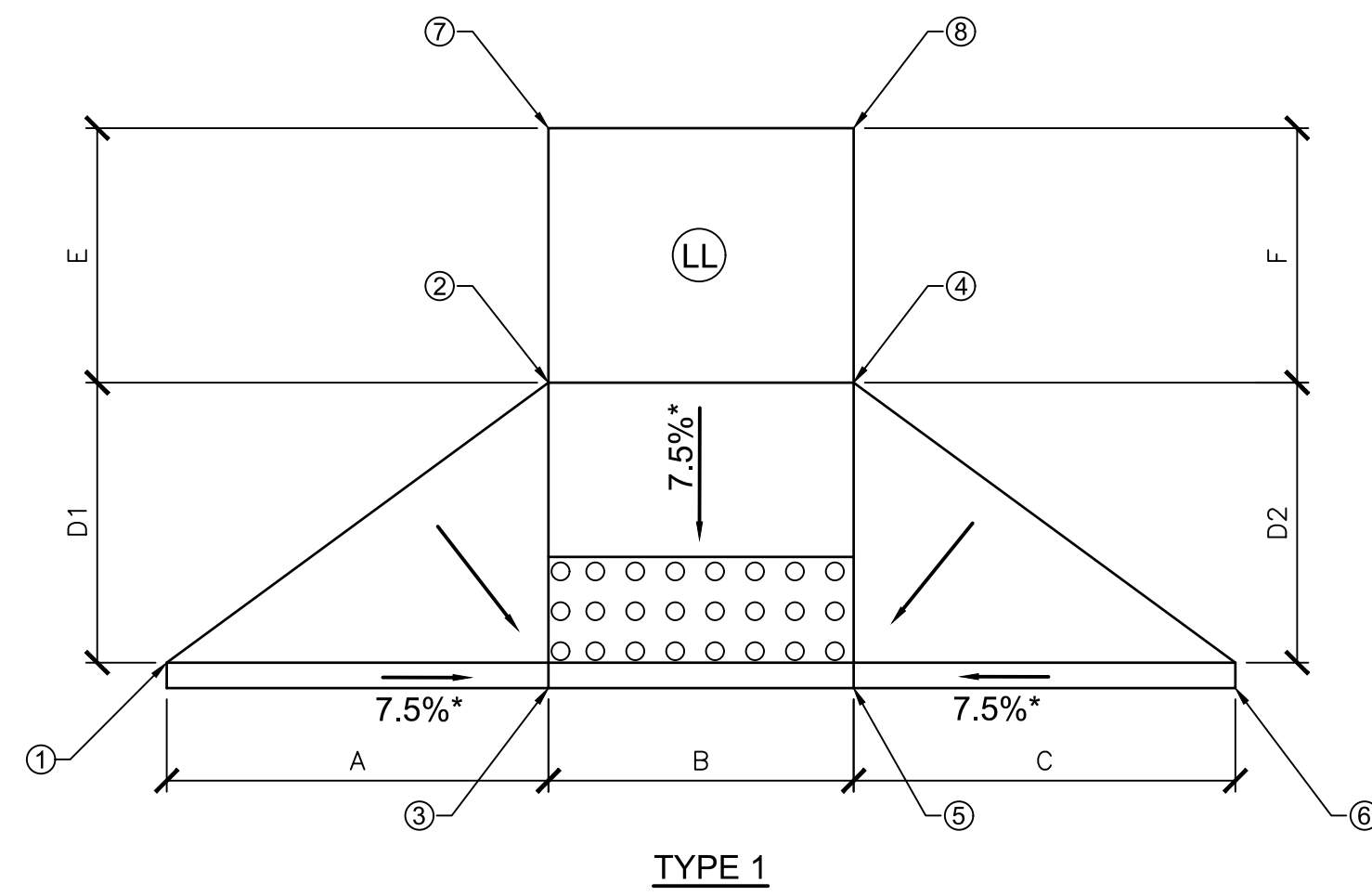


LEGEND

---	22.22	---	EXIST. CONTOURS
EL=(12.34)		---	EXIST. ELEVATION
EL=12.34		---	PROP. ELEVATION
TC=12.34		---	PROP. TOP OF CURB ELEVATION
BC=12.34		---	PROP. BOTTOM OF CURB ELEVATION
---		---	INSET OF RAMP GRADING

PLOT DATE: 3/25/2022 10:09:45 AM USER: DAVIS, JACQUELINE FILENAME: c:\pwworking\hess01\10166890\C-15-18 Grading.dwg

 HDR ENGINEERING, INC. 99 HIGH STREET, SUITE 2300 BOSTON, MASSACHUSETTS 02110-2378 (617) 357-7700		Scale	AS NOTED				Client	CITY OF CAMBRIDGE, MA	Sheet	C-5.4								
		Date	MARCH 2022	Job No.			Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.									
Designed by	JCD	Checked by	HJN	No.		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Description</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Description	Date							Drawing	GRADING PLAN 4		
Description	Date																	
Drawn by	JCD	Approved by	HJN	REVISIONS														



RAMP NO.	RAMP TYPE	RAMP REFERENCE POINT		TRANS			RAMP LENGTH		LANDING LENGTH		ELEVATION							
		STATION	OFFSET	A	B	C	D1	D2	E	F	1	2	3	4	5	6	7	8
1	1	101+75.81	27.00L	6.50	5.00	5.00	5.00	5.00	4.50	4.50	51.71	51.60	51.23	51.59	51.22	51.59	51.66	51.65
2	1	101+93.71	27.00R	6.50	5.00	6.50	5.00	5.00	5.00	5.00	51.62	51.55	51.17	51.59	51.22	51.70	51.58	51.66
3	1	105+45.00	27.00L	6.50	5.00	6.50	5.00	5.00	4.50	4.50	50.34	50.26	50.00	50.31	49.95	50.44	50.30	50.37
4	1	105+45.00	27.00R	6.50	5.00	6.50	5.00	5.00	4.50	4.50	50.76	50.66	50.28	50.69	50.31	50.79	50.73	50.76
5	1	107+97.83	27.00L	6.50	5.00	6.50	5.00	5.00	4.50	4.50	49.60	49.57	49.20	49.60	49.23	49.68	49.64	49.66
6	1	107+97.83	27.00R	6.50	5.00	6.50	5.00	5.00	4.50	4.50	49.99	49.88	49.51	49.90	49.53	50.03	49.96	49.95
7	2	70+51.00	27.50L	6.50	8.00	N/A	4.00	4.00			53.51	53.33	53.03	53.46	53.16	N/A		
8	2	70+80.39	42.87L	N/A	8.00	6.50	6.00	6.00			N/A	53.46	53.24	53.47	53.36	53.84		
9	2	111+70.45	25.96L	5.00	5.00	5.00	6.00	6.00			53.60	53.64	53.23	53.72	53.30	53.67		

PEDESTRIAN RAMP GEOMETRIC DATA

NOTES:

- SEE ALIGNMENT AND CURB TIE PLANS FOR LOCATION OF RAMPS.
- FINAL RAMP ELEVATIONS SHALL GRADE TO DRAIN AND LAYOUT SHALL BE APPROVED BY ENGINEER PRIOR TO PLACEMENT.
- ALL PEDESTRIAN RAMP GRADES SHALL CONFORM TO THE LATEST EDITION OF "MASS HIGHWAY DESIGN AND CONSTRUCTION GUIDELINES FOR WHEELCHAIR RAMP & PEDESTRIAN ACCESS".
- TRUNCATED DOME DETECTION PANEL TYPICAL FOR ALL RAMP TYPES.

LEGEND

- * = TOLERANCE FOR CONSTRUCTION ±0.5%
- ⓁⓁ = LEVEL LANDING - 1.5%* MAX SLOPE FOR DRAINAGE

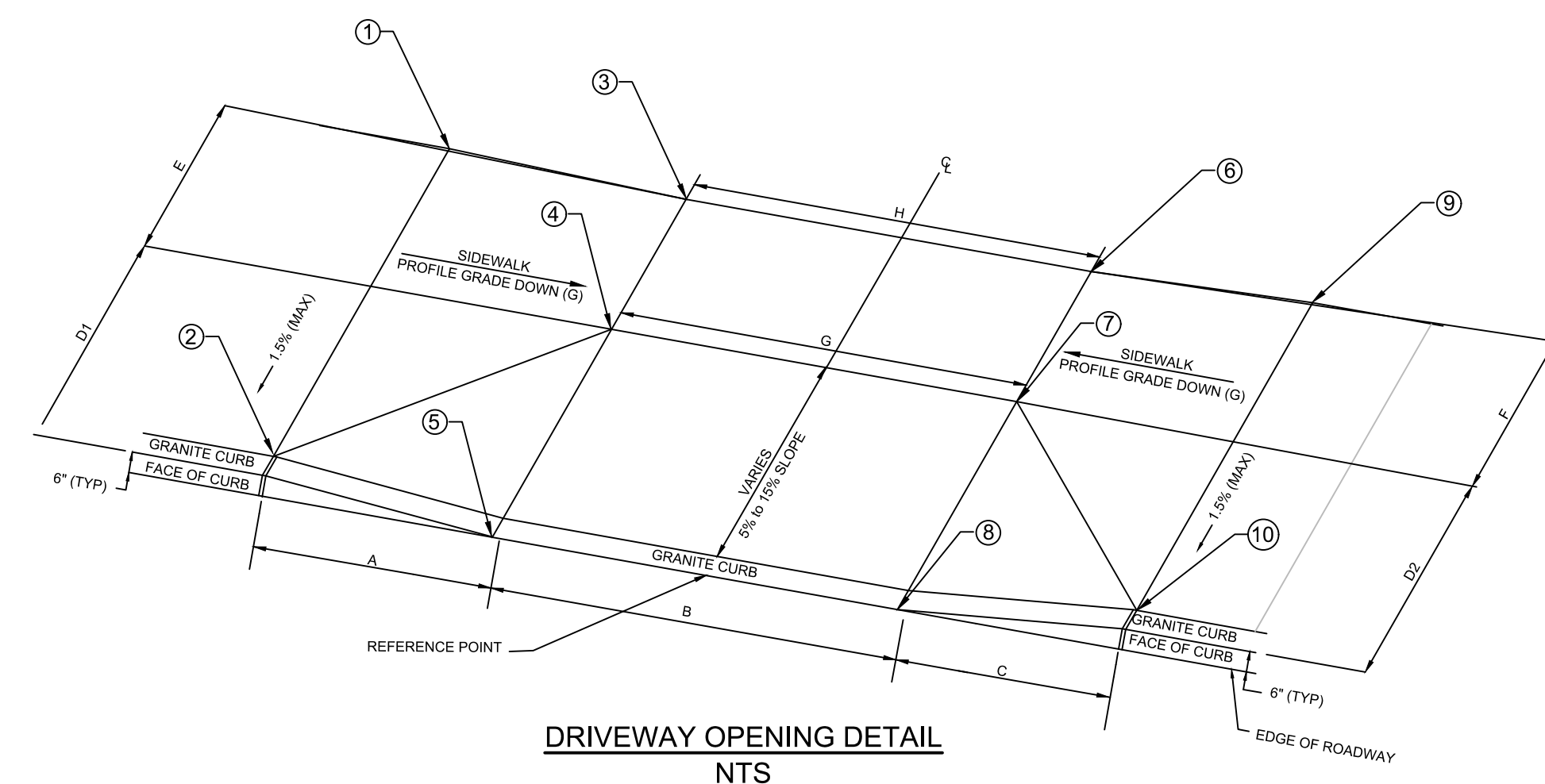
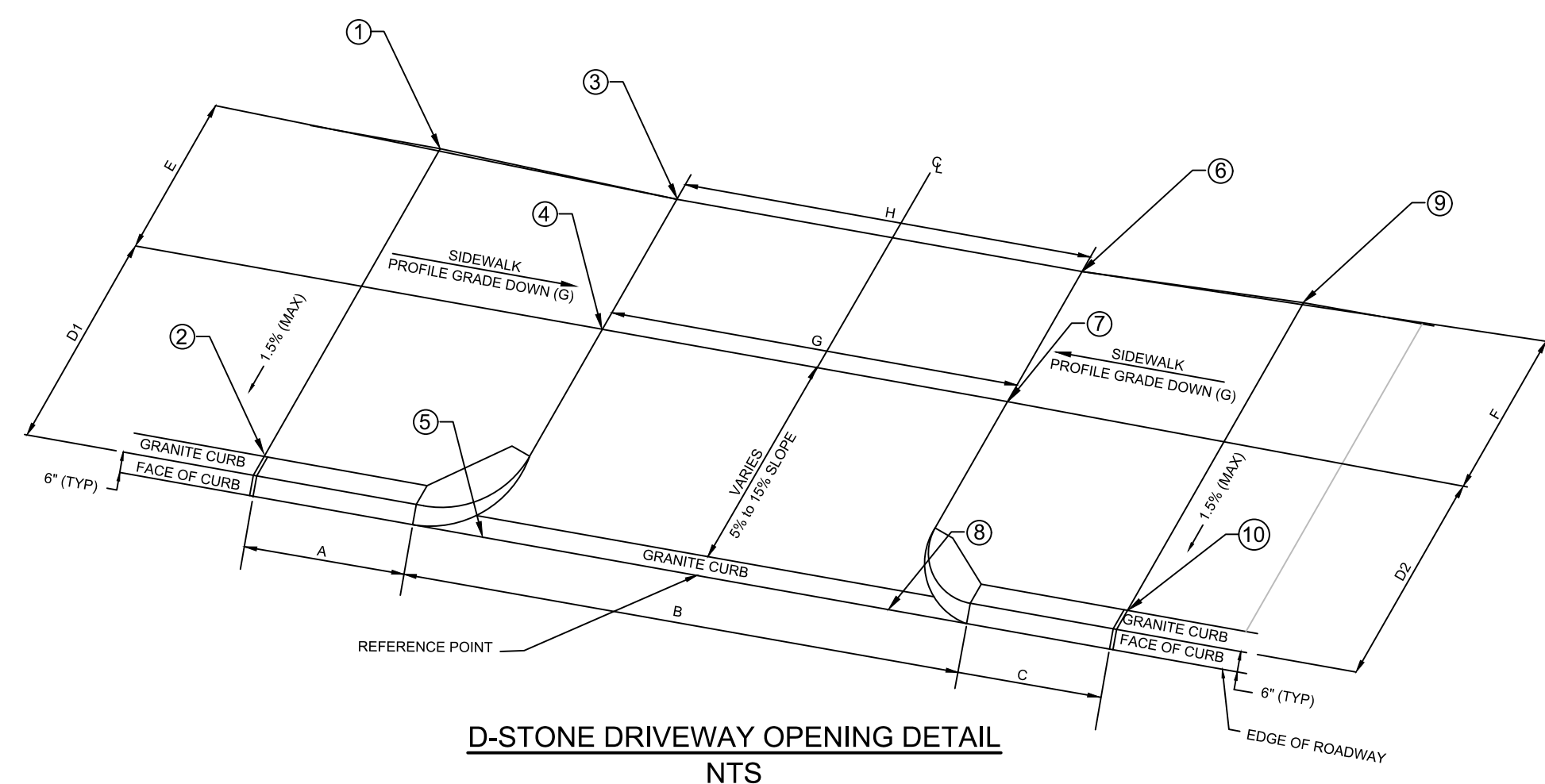
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Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN	REVISIONS		



Client	CITY OF CAMBRIDGE, MA	Sheet	C-6.0
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	PEDESTRIAN RAMP DETAILS		



DRIVEWAY NO.	TYPE	DRIVEWAY CENTERLINE REFERENCE POINT		TRANS L	RAMP W	TRANS L	RAMP LENGTH		LANDING LENGTH		LANDING WIDTH		ELEVATION									
		STATION	OFFSET				A	B	C	D1	D2	E	F	G	H	1	2	3	4	5	6	7
1	1	100+44.80	29.00R	0.00	15.33	0.00	3.75	3.75	4.00	4.00	11.33	10.63			52.66	52.61	52.16	52.66	52.60	52.10		
2	2	100+51.45	29.00L	6.50	11.69	6.50	3.50	3.50	4.00	4.00	11.69	11.69	52.05	51.95	52.00	51.95	51.57	51.91	51.85	51.39	51.97	51.87
3	1	100+87.50	29.00R	0.00	14.98	0.00	3.00	3.00	4.50	4.50	11.93	11.93			52.35	52.29	51.84	52.46	52.40	51.95		
4	2	102+41.78	27.00L	6.50	7.65	6.50	3.00	3.00	7.00	7.00	7.65	7.65	51.55	51.44	51.53	51.43	50.98	51.50	51.40	50.95	51.52	51.40
5	2	102+80.67	27.00L	6.50	10.18	6.50	3.00	3.00	7.00	7.00	10.18	10.18	51.39	51.30	51.37	51.27	50.82	51.33	51.23	50.78	51.35	51.25
6	1	102+89.32	27.00R	0.00	14.99	0.00	5.00	5.00	5.00	5.00	10.99	10.99			51.70	51.63	50.88	51.66	51.59	50.90		
7	1	103+49.60	27.00R	0.00	18.63	0.00	5.00	5.00	5.00	5.00	14.63	14.63			51.51	51.44	50.93	51.52	51.45	51.00		
8	2	104+53.16	27.00L	6.50	11.30	6.50	3.00	3.00	7.00	7.00	11.30	11.30	51.01	50.87	50.95	50.85	50.40	50.85	50.75	50.30	50.91	50.77
9	2	106+18.53	27.00L	6.50	9.25	6.50	3.00	3.00	7.00	7.00	9.25	9.25	50.83	50.68	50.73	50.64	50.20	50.70	50.60	50.40	50.74	50.60
10	1	106+44.29	26.41R	0.00	23.07	0.00	3.00	3.00	7.00	7.00	19.07	19.07			50.36	50.26	49.85	50.48	50.38	49.95		
11	2	107+00.12	27.00L	11.00	10.18	11.00	4.75	4.75	5.25	5.25	10.18	10.18	50.52	50.38	50.46	50.39	49.70	50.36	50.29	49.60	50.38	50.25
12	1	107+78.28	27.00R	0.00	20.41	0.00	3.25	3.25	6.75	6.75	16.41	16.41			50.12	50.02	49.55	50.14	50.04	49.60		
13	1	108+16.50	27.00R	0.00	15.04	0.00	3.00	3.00	7.00	7.00	11.04	11.04			50.03	49.93	49.50	50.13	50.03	49.60		
14	2	108+73.41	27.00L	6.50	14.16	6.50	3.00	3.00	8.00	8.00	14.16	14.16	49.33	49.19	49.31	49.19	48.85	49.49	49.39	48.95	49.57	49.43
15	1	109+49.54	27.00R	0.00	24.75	0.00	2.00	2.00	9.50	9.50	20.70	20.54			50.75	50.61	50.31	50.58	50.44	50.14		
16	2	110+39.13	27.00L	6.50	19.33	6.50	2.00	2.00	9.00	9.00	19.33	19.33	51.35	51.21	51.29	51.20	50.90	51.60	51.50	51.20	51.74	51.58
17	2	60+85.98	16.00L	6.50	10.99	6.50	2.00	2.00	7.00	7.00	10.99	10.99	49.29	49.15	48.55	48.50	48.20	47.55	47.50	47.20	47.57	47.40
18	2	62+04.55	16.00L	6.50	8.39	6.50	2.00	2.00	7.00	7.00	8.29	7.92	42.00	41.86	41.65	41.51	41.21	41.25	41.21	40.91	41.28	41.27

DRIVEWAY RAMP GEOMETRIC DATA

- NOTES:**
- SEE ALIGNMENT AND CURB TIE PLANS FOR LOCATION OF RAMPS.
 - FINAL RAMP ELEVATIONS SHALL GRADE TO DRAIN AND LAYOUT SHALL BE APPROVED BY ENGINEER PRIOR TO PLACEMENT.
 - ALL PEDESTRIAN RAMP GRADES SHALL CONFORM TO THE LATEST EDITION OF "MASS HIGHWAY DESIGN AND CONSTRUCTION GUIDELINES FOR WHEELCHAIR RAMP & PEDESTRIAN ACCESS".
 - TRUNCATED DOME DETECTION PANEL TYPICAL FOR ALL RAMP TYPES.

- LEGEND**
- * = TOLERANCE FOR CONSTRUCTION ±0.5%
 - LL = LEVEL LANDING - 1.5%* MAX SLOPE FOR DRAINAGE

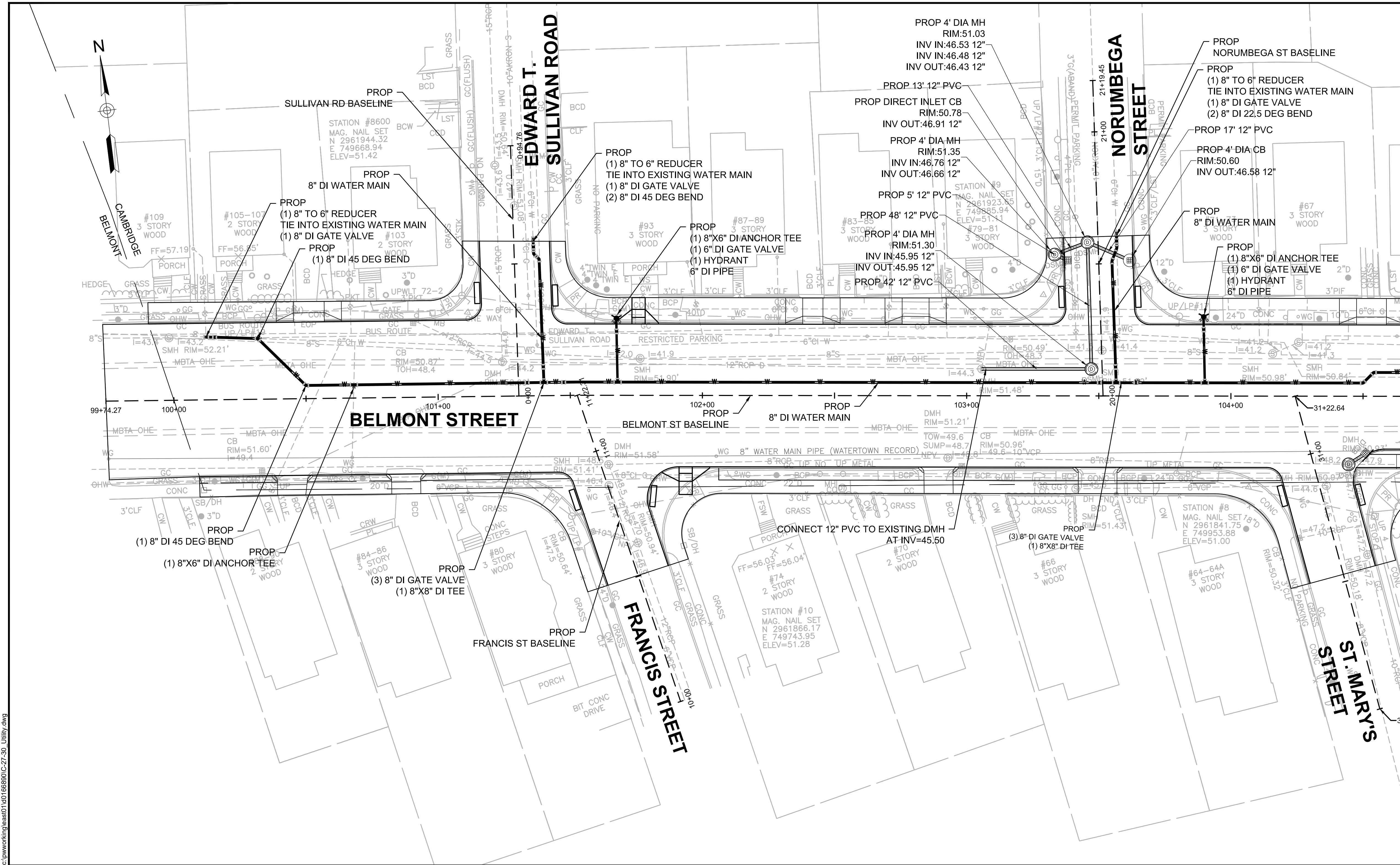
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HDR ENGINEERING, INC.
 99 HIGH STREET, SUITE 2300
 BOSTON, MASSACHUSETTS 02110-2378
 (617) 357-7700

Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	

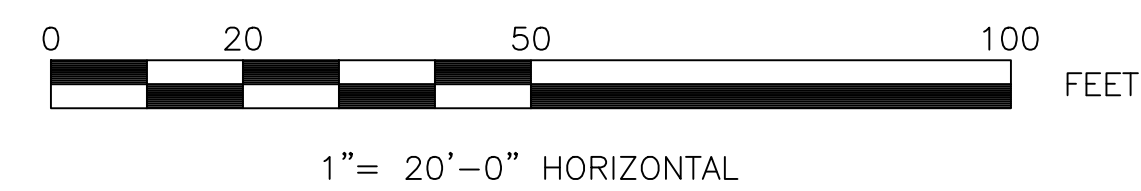
Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	DRIVEWAY DETAILS

Sheet	C-7.0
File No.	



- NOTES:
1. THE CAMBRIDGE WATER DEPARTMENT (CWD) WILL NOT ISSUE NEW WATER CONSTRUCTION PERMITS UNTIL ALL REQUIREMENTS FOR PREVIOUS (I.E., INITIAL CWD PERMIT) CWD PERMITS ARE MET. THESE REQUIREMENTS INCLUDE ACCURATE AND LEGIBLE SWING TIE DIMENSIONS TO ALL NEW WATER MAIN GATE VALVES, TEES, AND BENDS. REQUIRED CWD "SIGN OFFS" ON THE CONTRACTOR'S COPY OF THE CWD EXECUTED PERMIT (WHEN PERMITTED WORK IS COMPLETED), TEST DOCUMENTATION THAT INCLUDES MASSACHUSETTS STATE CERTIFIED INITIAL CHLORINATION AND BACTERIA TESTING OF NEW WATER MAIN WORK, AND PRESSURE TEST RESULTS OF NEW WATER MAIN WORK. THE CONTRACTOR IS HEREBY ADVISED THAT THE CWD WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S SLIP IN PROJECT SCHEDULE IF THESE REQUIREMENTS FOR PERMITS ARE NOT FOLLOWED.
 2. CONTRACTOR SHALL CONNECT WATER SERVICES TO NEW WATER MAIN. EXISTING LEAD SERVICES SHALL BE REMOVED AND REPLACED TO THE BACK OF SIDEWALK.
 3. UNLESS OTHERWISE NOTED, WATER MAINS SHALL BE INSTALLED WITH MINIMUM 5.0' COVER. WATER MAIN ELEVATIONS LISTED IN THE DRAWINGS REFER TO TOP OF WATER MAIN.
 4. CONTRACTOR TO PROVIDE 1" CHLORINATION TAP AT ALL LOCATIONS WHERE PROP WATER MAIN CONNECTS TO EXISTING WATER MAIN.
 5. WATER GATES, BOXES, HYDRANTS SHALL BE INSTALLED TO EXISTING GRADE AND ADJUSTED TO FINAL GRADE ELEVATIONS DURING SURFACE RESTORATION WORK.
 6. ALL NEW AND RELOCATED HYDRANTS TO BE FLOW TESTED IN COORDINATION WITH THE CWD AND PAINTED PER THE CWD SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH CWD FOR PAINT SPECIFICATIONS/COLOR.
 7. GEOTECHNICAL MONITORING POINTS AND LOCATIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO EXCAVATION, BY THE ENGINEER. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 8. AT ALL LOCATIONS WHERE STEEL GAS MAINS ARE ENCOUNTERED, THERE IS THE POTENTIAL OF ASBESTOS FIBERS WITHIN THE COAL-TAR WRAP. WHERE IT IS REQUIRED TO REMOVE THESE ABANDONED SECTIONS, CONTRACTOR WILL BE REQUIRED TO REMOVE THE SECTIONS WITH THE USE OF HAND TOOLS AND PLACE IN LINED ROLL OF BINS PROVIDED BY NSTAR GAS. COORDINATE WITH NSTAR GAS ON THE DISPOSAL OF THE PIPE. NSTAR GAS WILL BE RESPONSIBLE FOR DISPOSAL OF THE REMOVED SECTIONS.
 9. WATER SERVICE REPLACEMENTS ON WATERTOWN SIDE ARE NOT SHOWN ON PLANS, SEE TABLE BELOW FOR LOCATIONS.

WATERTOWN WATER SERVICE REPLACEMENT	
NUMBER	STREET
18-20	BELMONT STREET
22	BELMONT STREET
28-30	BELMONT STREET
64-64A	BELMONT STREET (OFF ST. MARY'S STREET)
66-68	BELMONT STREET
70-72	BELMONT STREET
74-76	BELMONT STREET
80-82	BELMONT STREET
84-86	BELMONT STREET
88-90	BELMONT STREET



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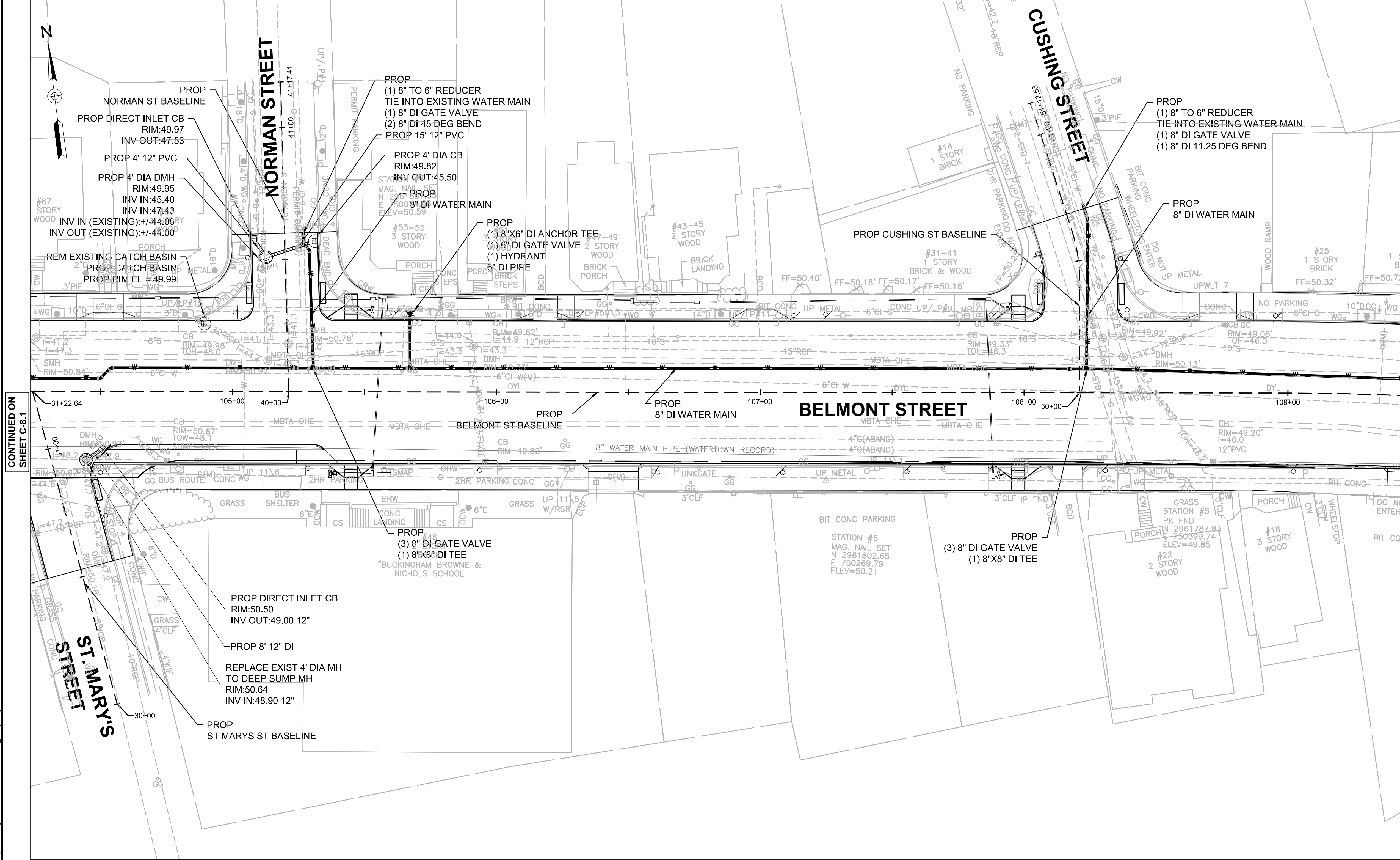
HDR ENGINEERING, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MASSACHUSETTS 02110-2378
(617) 357-7700



Scale	AS NOTED		
Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		REVISIONS

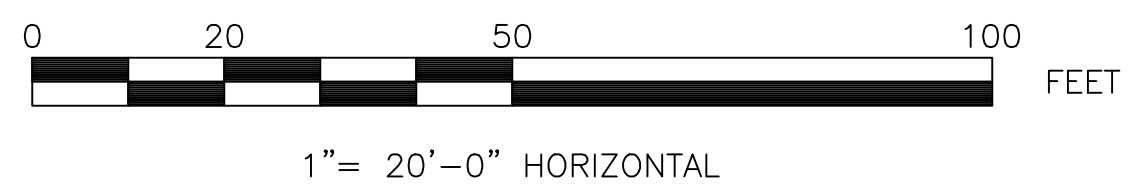


Client	CITY OF CAMBRIDGE, MA	Sheet	C-8.1
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CIVIL UTILITY PLAN 1		



- NOTES:
1. THE CAMBRIDGE WATER DEPARTMENT (CWD) WILL NOT ISSUE NEW WATER CONSTRUCTION PERMITS UNTIL ALL REQUIREMENTS FOR PREVIOUS (I.E., INITIAL CWD PERMIT) CWD PERMITS ARE MET. THESE REQUIREMENTS INCLUDE ACCURATE AND LEGIBLE SWING TIE DIMENSIONS TO ALL NEW WATER MAIN GATE VALVES, TEES, AND BENDS. REQUIRED CWD "SIGN OFFS" ON THE CONTRACTOR'S COPY OF THE CWD EXECUTED PERMIT (WHEN PERMITTED WORK IS COMPLETED), TEST DOCUMENTATION THAT INCLUDES MASSACHUSETTS STATE CERTIFIED INITIAL CHLORINATION AND BACTERIA TESTING OF NEW WATER MAIN WORK, AND PRESSURE TEST RESULTS OF NEW WATER MAIN WORK. THE CONTRACTOR IS HEREBY ADVISED THAT THE CWD WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S SLIP IN PROJECT SCHEDULE IF THESE REQUIREMENTS FOR PERMITS ARE NOT FOLLOWED.
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 3. UNLESS OTHERWISE NOTED, WATER MAINS SHALL BE INSTALLED WITH MINIMUM 5.0' COVER. WATER MAIN ELEVATIONS LISTED IN THE DRAWINGS REFER TO TOP OF WATER MAIN.
 4. CONTRACTOR TO PROVIDE 1" CHLORINATION TAP AT ALL LOCATIONS WHERE PROP WATER MAIN CONNECTS TO EXISTING WATER MAIN.
 5. WATER GATES, BOXES, HYDRANTS SHALL BE INSTALLED TO EXISTING GRADE AND ADJUSTED TO FINAL GRADE ELEVATIONS DURING SURFACE RESTORATION WORK.
 6. ALL NEW AND RELOCATED HYDRANTS TO BE FLOW TESTED IN COORDINATION WITH THE CWD AND PAINTED PER THE CWD SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH CWD FOR PAINT SPECIFICATIONS/COLOR.
 7. GEOTECHNICAL MONITORING POINTS AND LOCATIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO EXCAVATION, BY THE ENGINEER, SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 8. AT ALL LOCATIONS WHERE STEEL GAS MAINS ARE ENCOUNTERED, THERE IS THE POTENTIAL OF ASBESTOS FIBERS WITHIN THE COAL-TAR WRAP. WHERE IT IS REQUIRED TO REMOVE THESE ABANDONED SECTIONS, CONTRACTOR WILL BE REQUIRED TO REMOVE THE SECTIONS WITH THE USE OF HAND TOOLS AND PLACE IN LINED ROLL OF BINS PROVIDED BY NSTAR GAS. COORDINATE WITH NSTAR GAS ON THE DISPOSAL OF THE PIPE. NSTAR GAS WILL BE RESPONSIBLE FOR DISPOSAL OF THE REMOVED SECTIONS.
 9. WATER SERVICE REPLACEMENTS ON WATERTOWN SIDE ARE NOT SHOWN ON PLANS, SEE TABLE BELOW FOR LOCATIONS.

WATERTOWN WATER SERVICE REPLACEMENT	
NUMBER	STREET
18-20	BELMONT STREET
22	BELMONT STREET
28-30	BELMONT STREET
64-64A	BELMONT STREET (OFF ST. MARY'S STREET)
66-68	BELMONT STREET
70-72	BELMONT STREET
74-76	BELMONT STREET
80-82	BELMONT STREET
84-86	BELMONT STREET
88-90	BELMONT STREET



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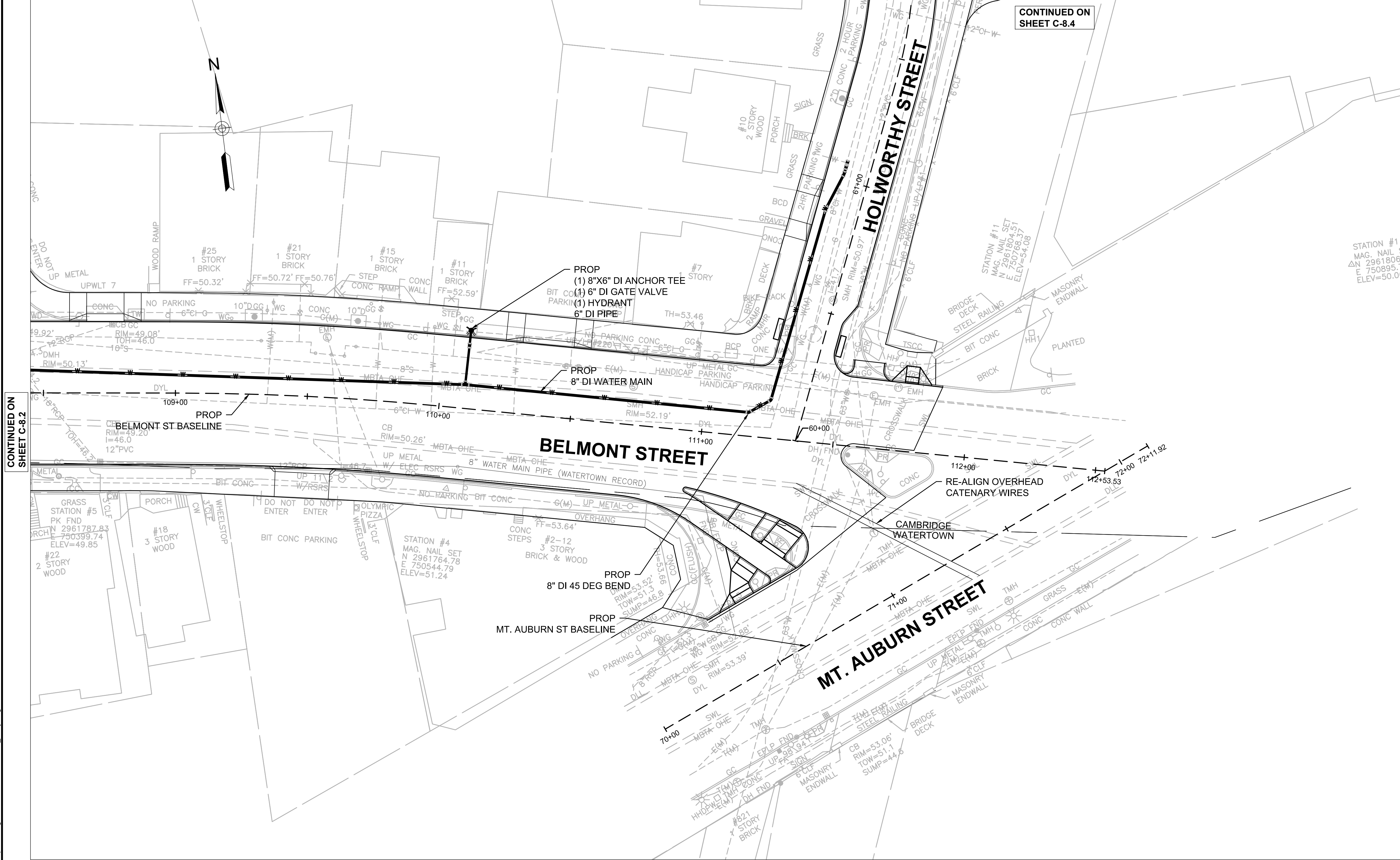
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Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		REVISIONS



Client	CITY OF CAMBRIDGE, MA	Sheet	C-8.2
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CIVIL UTILITY PLAN 2		

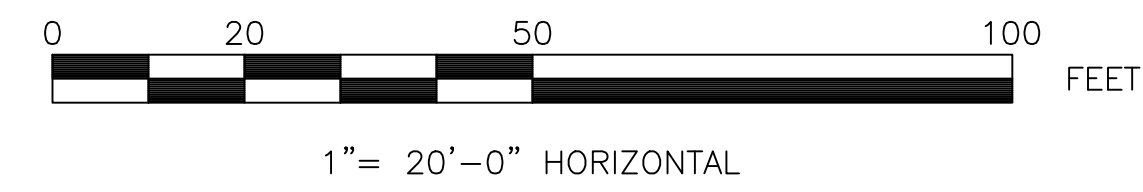
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CONTINUED ON SHEET C-8.4



- NOTES:
1. THE CAMBRIDGE WATER DEPARTMENT (CWD) WILL NOT ISSUE NEW WATER CONSTRUCTION PERMITS UNTIL ALL REQUIREMENTS FOR PREVIOUS (I.E., INITIAL CWD PERMIT) CWD PERMITS ARE MET. THESE REQUIREMENTS INCLUDE ACCURATE AND LEGIBLE SWING TIE DIMENSIONS TO ALL NEW WATER MAIN GATE VALVES, TEES, AND BENDS. REQUIRED CWD "SIGN OFFS" ON THE CONTRACTOR'S COPY OF THE CWD EXECUTED PERMIT (WHEN PERMITTED WORK IS COMPLETED), TEST DOCUMENTATION THAT INCLUDES MASSACHUSETTS STATE CERTIFIED INITIAL CHLORINATION AND BACTERIA TESTING OF NEW WATER MAIN WORK, AND PRESSURE TEST RESULTS OF NEW WATER MAIN WORK. THE CONTRACTOR IS HEREBY ADVISED THAT THE CWD WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S SLIP IN PROJECT SCHEDULE IF THESE REQUIREMENTS FOR PERMITS ARE NOT FOLLOWED.
 2. CONTRACTOR SHALL CONNECT WATER SERVICES TO NEW WATER MAIN. EXISTING LEAD SERVICES SHALL BE REMOVED AND REPLACED TO THE BACK OF SIDEWALK.
 3. UNLESS OTHERWISE NOTED, WATER MAINS SHALL BE INSTALLED WITH MINIMUM 5.0' COVER. WATER MAIN ELEVATIONS LISTED IN THE DRAWINGS REFER TO TOP OF WATER MAIN.
 4. CONTRACTOR TO PROVIDE 1" CHLORINATION TAP AT ALL LOCATIONS WHERE PROP WATER MAIN CONNECTS TO EXISTING WATER MAIN.
 5. WATER GATES, BOXES, HYDRANTS SHALL BE INSTALLED TO EXISTING GRADE AND ADJUSTED TO FINAL GRADE ELEVATIONS DURING SURFACE RESTORATION WORK.
 6. ALL NEW AND RELOCATED HYDRANTS TO BE FLOW TESTED IN COORDINATION WITH THE CWD AND PAINTED PER THE CWD SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH CWD FOR PAINT SPECIFICATIONS/COLOR.
 7. GEOTECHNICAL MONITORING POINTS AND LOCATIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO EXCAVATION, BY THE ENGINEER, SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 8. AT ALL LOCATIONS WHERE STEEL GAS MAINS ARE ENCOUNTERED, THERE IS THE POTENTIAL OF ASBESTOS FIBERS WITHIN THE COAL-TAR WRAP. WHERE IT IS REQUIRED TO REMOVE THESE ABANDONED SECTIONS, CONTRACTOR WILL BE REQUIRED TO REMOVE THE SECTIONS WITH THE USE OF HAND TOOLS AND PLACE IN LINED ROLL OF BINS PROVIDED BY NSTAR GAS. COORDINATE WITH NSTAR GAS ON THE DISPOSAL OF THE PIPE. NSTAR GAS WILL BE RESPONSIBLE FOR DISPOSAL OF THE REMOVED SECTIONS.
 9. WATER SERVICE REPLACEMENTS ON WATERTOWN SIDE ARE NOT SHOWN ON PLANS, SEE TABLE BELOW FOR LOCATIONS.

WATERTOWN WATER SERVICE REPLACEMENT	
NUMBER	STREET
18-20	BELMONT STREET
22	BELMONT STREET
28-30	BELMONT STREET
64-64A	BELMONT STREET (OFF ST. MARY'S STREET)
66-68	BELMONT STREET
70-72	BELMONT STREET
74-76	BELMONT STREET
80-82	BELMONT STREET
84-86	BELMONT STREET
88-90	BELMONT STREET



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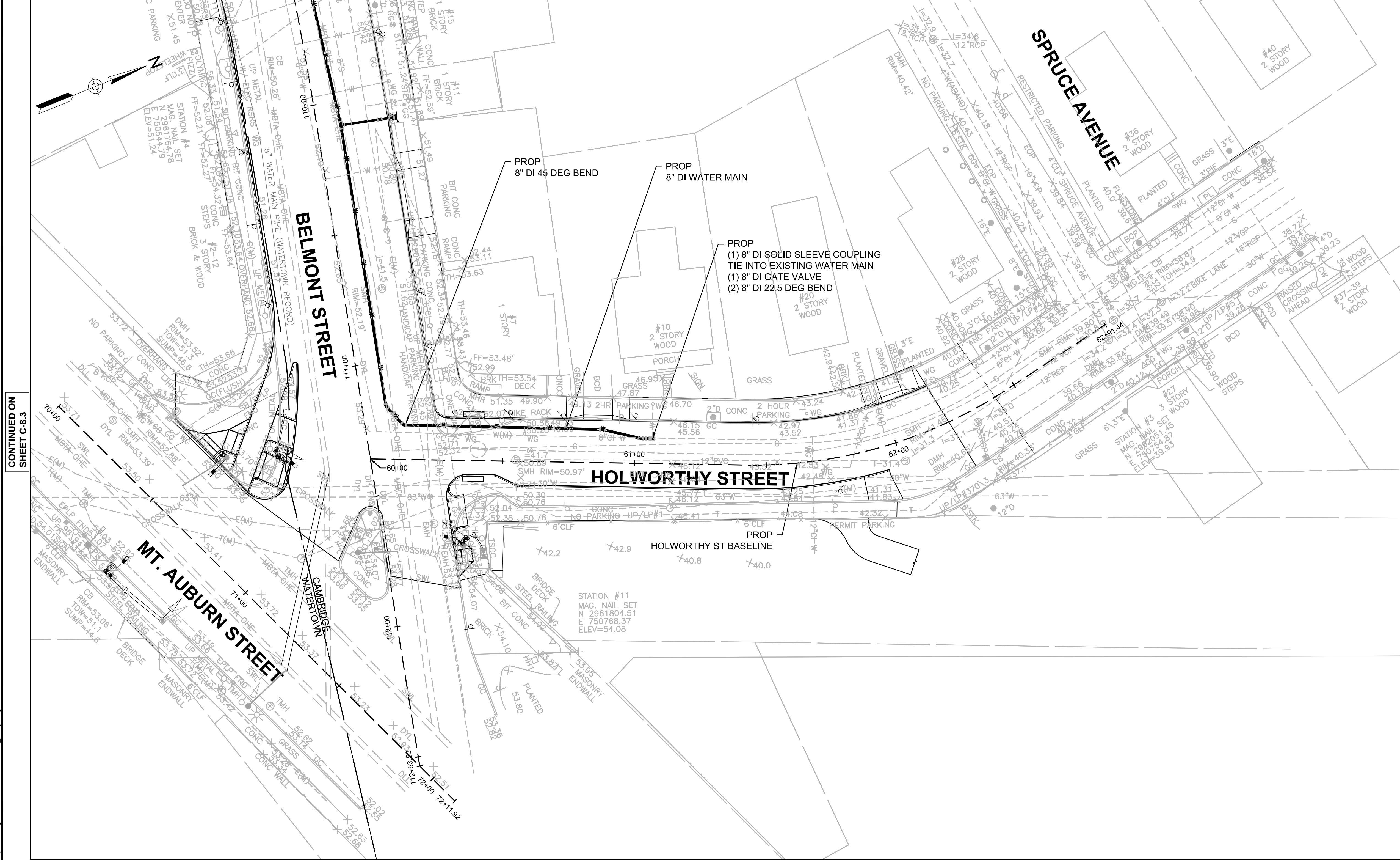
HDR ENGINEERING, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MASSACHUSETTS 02110-2378
(617) 357-7700



Scale	AS NOTED		
Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		REVISIONS

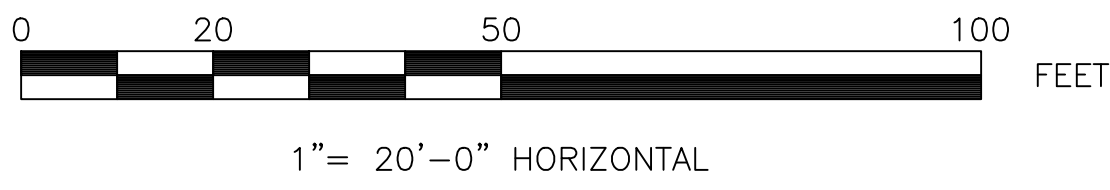


Client	CITY OF CAMBRIDGE, MA	Sheet	C-8.3
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	CIVIL UTILITY PLAN 3		



- NOTES:
1. THE CAMBRIDGE WATER DEPARTMENT (CWD) WILL NOT ISSUE NEW WATER CONSTRUCTION PERMITS UNTIL ALL REQUIREMENTS FOR PREVIOUS (I.E., INITIAL CWD PERMIT) CWD PERMITS ARE MET. THESE REQUIREMENTS INCLUDE ACCURATE AND LEGIBLE SWING TIE DIMENSIONS TO ALL NEW WATER MAIN GATE VALVES, TEES, AND BENDS. REQUIRED CWD "SIGN OFFS" ON THE CONTRACTOR'S COPY OF THE CWD EXECUTED PERMIT (WHEN PERMITTED WORK IS COMPLETED), TEST DOCUMENTATION THAT INCLUDES MASSACHUSETTS STATE CERTIFIED INITIAL CHLORINATION AND BACTERIA TESTING OF NEW WATER MAIN WORK, AND PRESSURE TEST RESULTS OF NEW WATER MAIN WORK. THE CONTRACTOR IS HEREBY ADVISED THAT THE CWD WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S SLIP IN PROJECT SCHEDULE IF THESE REQUIREMENTS FOR PERMITS ARE NOT FOLLOWED.
 2. CONTRACTOR SHALL CONNECT WATER SERVICES TO NEW WATER MAIN. EXISTING LEAD SERVICES SHALL BE REMOVED AND REPLACED TO THE BACK OF SIDEWALK.
 3. UNLESS OTHERWISE NOTED, WATER MAINS SHALL BE INSTALLED WITH MINIMUM 5.0' COVER. WATER MAIN ELEVATIONS LISTED IN THE DRAWINGS REFER TO TOP OF WATER MAIN.
 4. CONTRACTOR TO PROVIDE 1" CHLORINATION TAP AT ALL LOCATIONS WHERE PROP WATER MAIN CONNECTS TO EXISTING WATER MAIN.
 5. WATER GATES, BOXES, HYDRANTS SHALL BE INSTALLED TO EXISTING GRADE AND ADJUSTED TO FINAL GRADE ELEVATIONS DURING SURFACE RESTORATION WORK.
 6. GEOTECHNICAL MONITORING POINTS AND LOCATIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO EXCAVATION, BY THE ENGINEER, SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 7. AT ALL LOCATIONS WHERE STEEL GAS MAINS ARE ENCOUNTERED, THERE IS THE POTENTIAL OF ASBESTOS FIBERS WITHIN THE COAL-TAR WRAP. WHERE IT IS REQUIRED TO REMOVE THESE ABANDONED SECTIONS, CONTRACTOR WILL BE REQUIRED TO REMOVE THE SECTIONS WITH THE USE OF HAND TOOLS AND PLACE IN LINED ROLL OF BINS PROVIDED BY NSTAR GAS. COORDINATE WITH NSTAR GAS ON THE DISPOSAL OF THE PIPE. NSTAR GAS WILL BE RESPONSIBLE FOR DISPOSAL OF THE REMOVED SECTIONS.
 9. WATER SERVICE REPLACEMENTS ON WATERTOWN SIDE ARE NOT SHOWN ON PLANS, SEE TABLE BELOW FOR LOCATIONS.

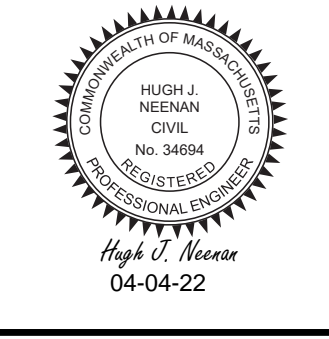
WATERTOWN WATER SERVICE REPLACEMENT	
NUMBER	STREET
18-20	BELMONT STREET
22	BELMONT STREET
28-30	BELMONT STREET
64-64A	BELMONT STREET (OFF ST. MARY'S STREET)
66-68	BELMONT STREET
70-72	BELMONT STREET
74-76	BELMONT STREET
80-82	BELMONT STREET
84-86	BELMONT STREET
88-90	BELMONT STREET



CONTINUED ON SHEET C-8.3

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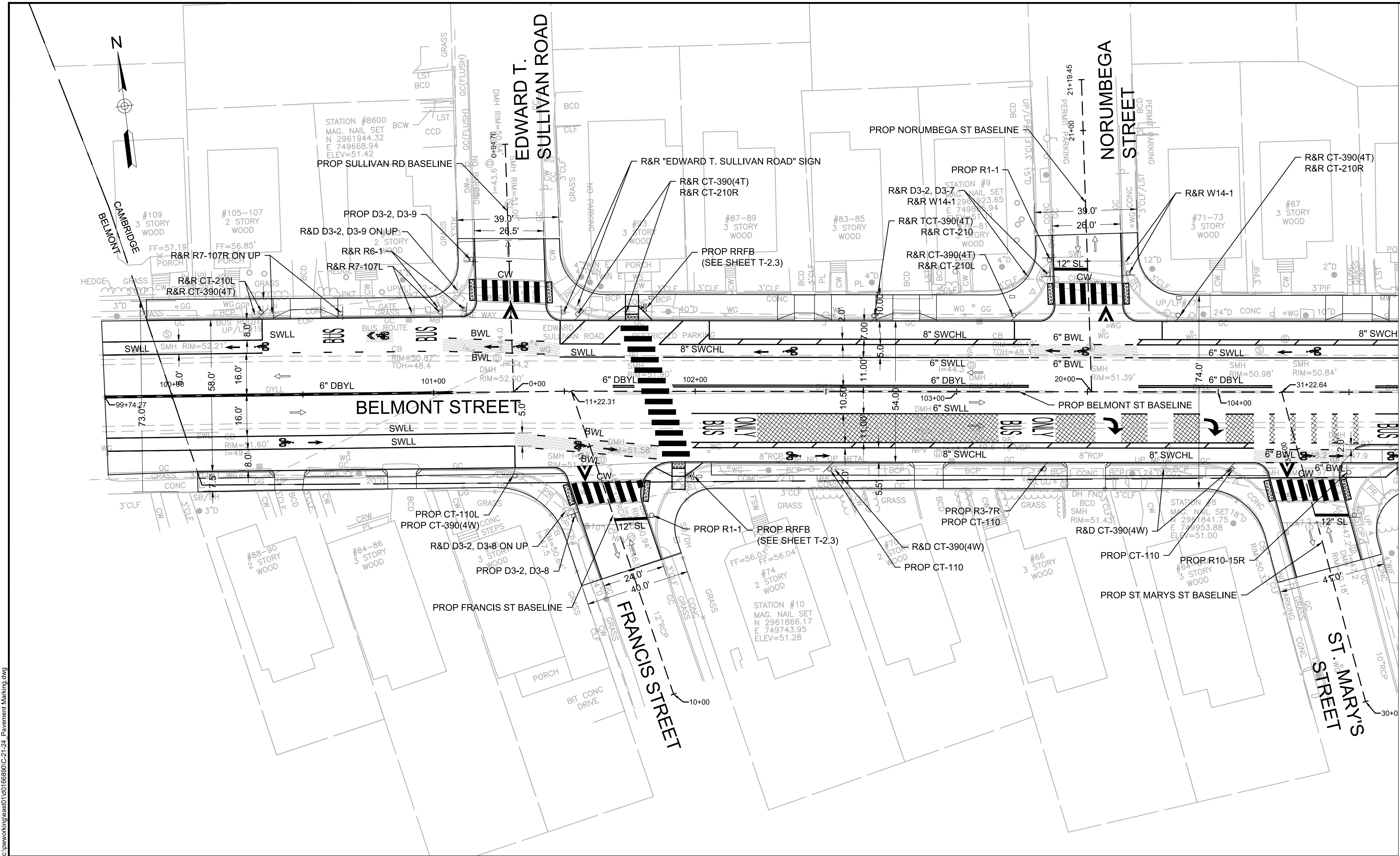


Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	



Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	CIVIL UTILITY PLAN 4

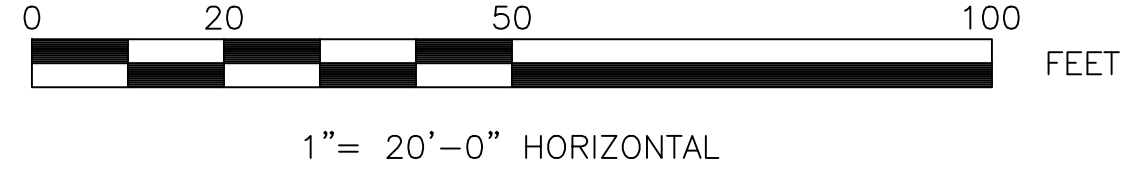
Sheet	C-8.4
File No.	



- NOTES:
1. ALL SIGNS DESIGNATED AS "R&R" OR "REMOVE AND RELOCATE" ARE TO BE REPLACED WITH NEW EQUIVALENT SIGNS.
 2. ALL SIGNS SHALL BE PLACED 18" FROM FACE OF CURB FOR SIGNS TO HAVE A 1' MINIMUM CLEARANCE BETWEEN THE EDGE OF SIGN AND THE EDGE OF FINISHED PAVEMENT.
 3. ALL SIGNS SHALL HAVE A 7' MINIMUM VERTICAL CLEARANCE BETWEEN THE BOTTOM OF THE SIGN AND THE TOP OF THE FINISHED SIDEWALK GRADE.
 4. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
 5. PROPOSED PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE 2009 MUTCD & MASSDOT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED.
 6. REMOVE EXISTING CROSSWALKS AND STOPLINES WITHIN LIMITS OF PROPOSED WORK.

CONTINUED ON SHEET C-9.2

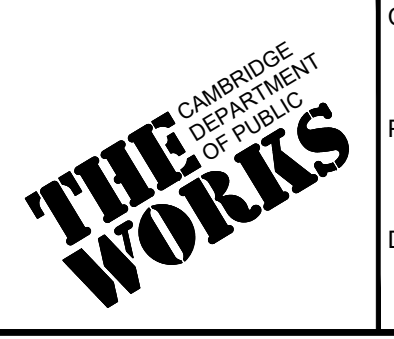
- LEGEND:
- HIGH FRICTION RED SURFACE TREATMENT
 - HIGH FRICTION GREEN SURFACE TREATMENT
 - DIRECTION OF TRAFFIC FLOW



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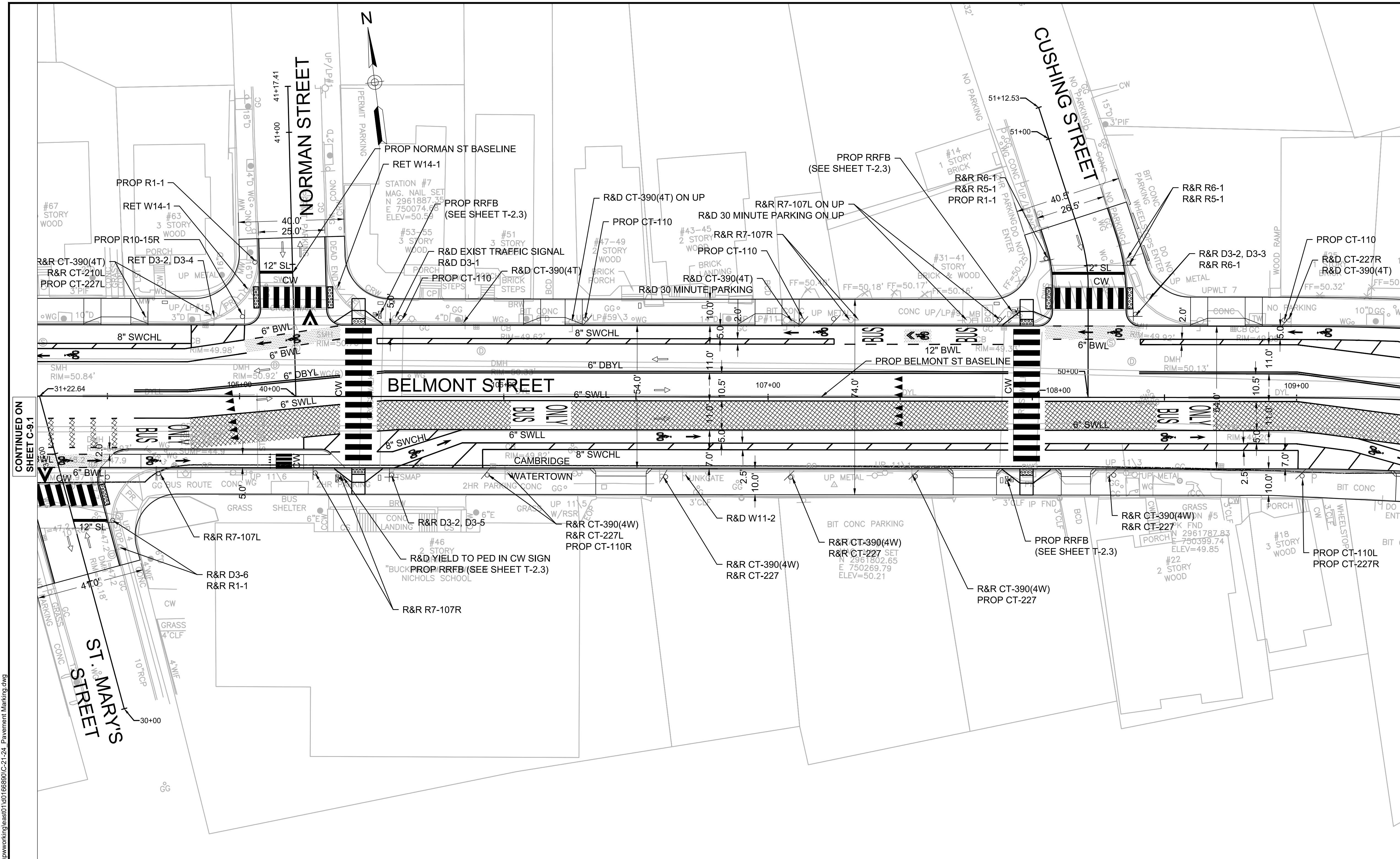
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Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		Date
			REVISIONS



Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	PAVEMENT MARKING AND SIGNAGE PLAN 1

Sheet	C-9.1
File No.	

PLOT DATE: 9/25/2022 10:10:56 AM USER: DAVIS, JACQUELINE FILENAME: c:\pwworking\east\1\0168880\C-21-24_Pavement Marking.dwg

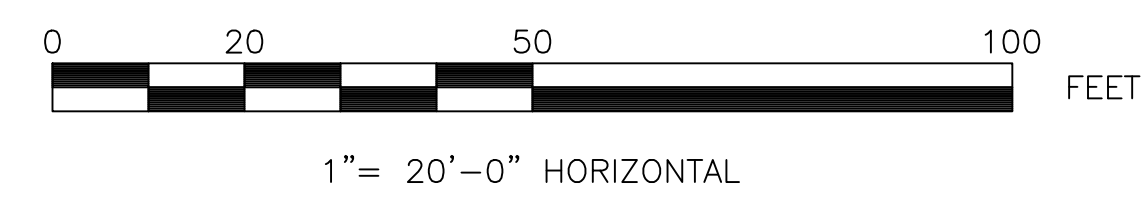


- NOTES:
1. ALL SIGNS DESIGNATED AS "R&R" OR "REMOVE AND RELOCATE" ARE TO BE REPLACED WITH NEW EQUIVALENT SIGNS.
 2. ALL SIGNS SHALL BE PLACED 18" FROM FACE OF CURB FOR SIGNS TO HAVE A 1' MINIMUM CLEARANCE BETWEEN THE EDGE OF SIGN AND THE EDGE OF FINISHED PAVEMENT.
 3. ALL SIGNS SHALL HAVE A 7' MINIMUM VERTICAL CLEARANCE BETWEEN THE BOTTOM OF THE SIGN AND THE TOP OF THE FINISHED SIDEWALK GRADE.
 4. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
 5. PROPOSED PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE 2009 MUTCD & MASSDOT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED.
 6. REMOVE EXISTING CROSSWALKS AND STOPLINES WITHIN LIMITS OF PROPOSED WORK.

CONTINUED ON SHEET C-9.1

CONTINUED ON SHEET C-9.3

- LEGEND:
- HIGH FRICTION RED SURFACE TREATMENT
 - HIGH FRICTION GREEN SURFACE TREATMENT
 - DIRECTION OF TRAFFIC FLOW



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 99 HIGH STREET, SUITE 2300
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 (617) 357-7700

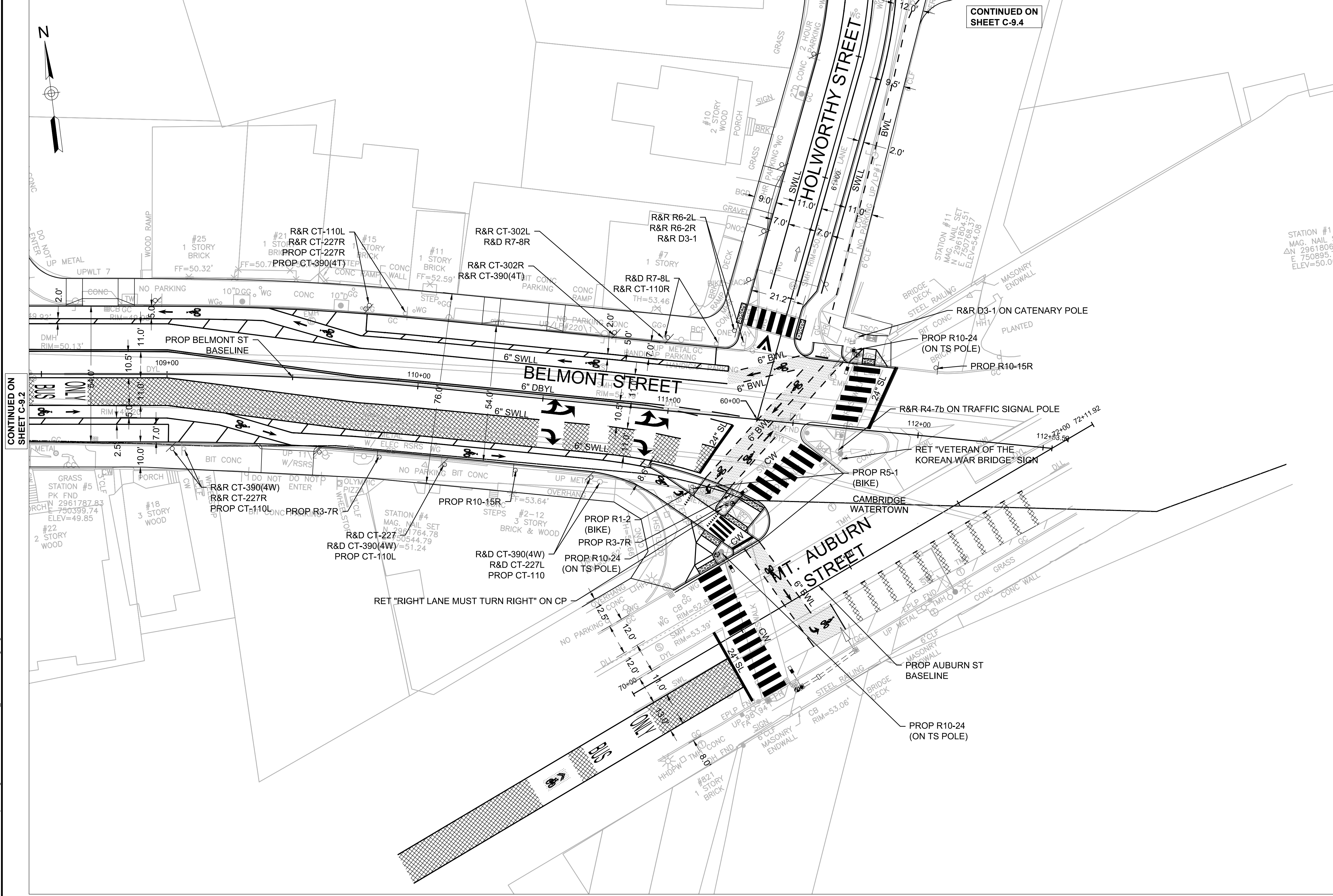
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Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		Date
			REVISIONS



Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	PAVEMENT MARKING AND SIGNAGE PLAN 2

Sheet	C-9.2
File No.	

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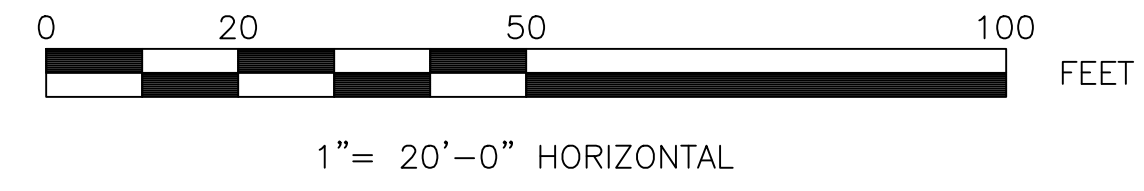


CONTINUED ON SHEET C-9.4

CONTINUED ON SHEET C-9.2

- NOTES:
1. ALL SIGNS DESIGNATED AS "R&R" OR "REMOVE AND RELOCATE" ARE TO BE REPLACED WITH NEW EQUIVALENT SIGNS.
 2. ALL SIGNS SHALL BE PLACED 18" FROM FACE OF CURB FOR SIGNS TO HAVE A 1' MINIMUM CLEARANCE BETWEEN THE EDGE OF SIGN AND THE EDGE OF FINISHED PAVEMENT.
 3. ALL SIGNS SHALL HAVE A 7' MINIMUM VERTICAL CLEARANCE BETWEEN THE BOTTOM OF THE SIGN AND THE TOP OF THE FINISHED SIDEWALK GRADE.
 4. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
 5. PROPOSED PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE 2009 MUTCD & MASSDOT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED.
 6. REMOVE EXISTING CROSSWALKS AND STOPLINES WITHIN LIMITS OF PROPOSED WORK.

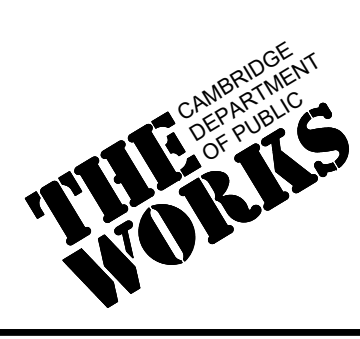
- LEGEND:
- [Cross-hatched box] HIGH FRICTION RED SURFACE TREATMENT
 - [Dotted box] HIGH FRICTION GREEN SURFACE TREATMENT
 - [Arrow] DIRECTION OF TRAFFIC FLOW



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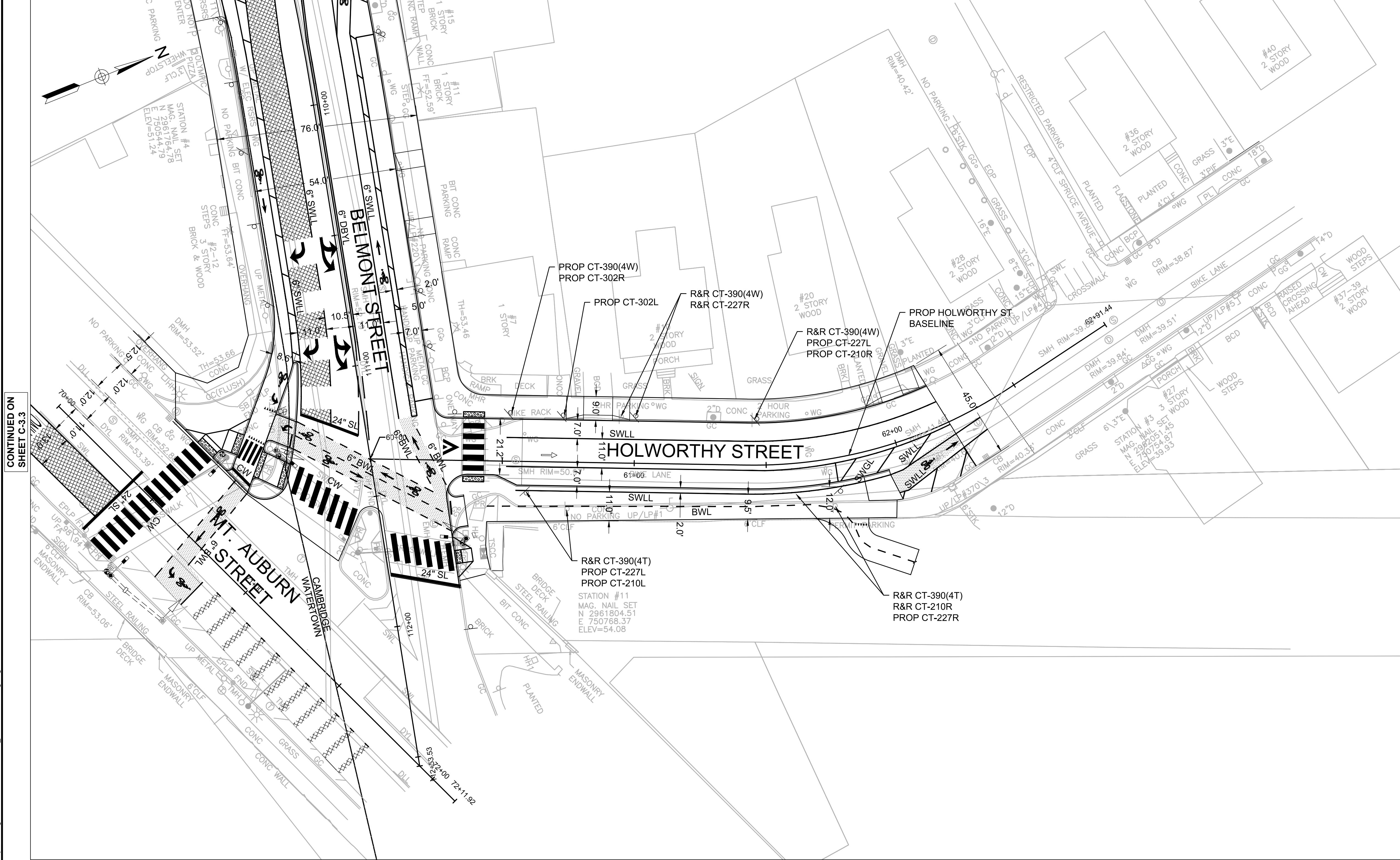


Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	



Client	CITY OF CAMBRIDGE, MA	Sheet	C-9.3
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	PAVEMENT MARKING AND SIGNAGE PLAN 3		

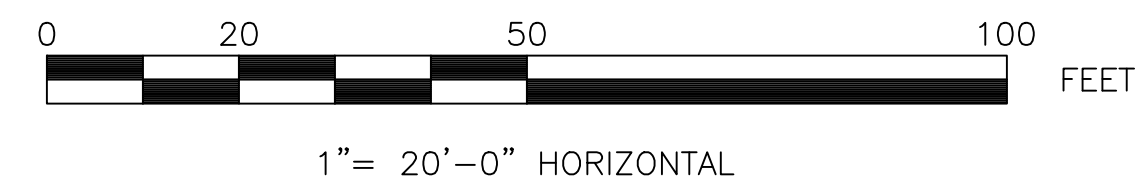
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- NOTES:
1. ALL SIGNS DESIGNATED AS "R&R" OR "REMOVE AND RELOCATE" ARE TO BE REPLACED WITH NEW EQUIVALENT SIGNS.
 2. ALL SIGNS SHALL BE PLACED 18" FROM FACE OF CURB FOR SIGNS TO HAVE A 1' MINIMUM CLEARANCE BETWEEN THE EDGE OF SIGN AND THE EDGE OF FINISHED PAVEMENT.
 3. ALL SIGNS SHALL HAVE A 7' MINIMUM VERTICAL CLEARANCE BETWEEN THE BOTTOM OF THE SIGN AND THE TOP OF THE FINISHED SIDEWALK GRADE.
 4. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
 5. PROPOSED PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE 2009 MUTCD & MASSDOT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED.
 6. REMOVE EXISTING CROSSWALKS AND STOPLINES WITHIN LIMITS OF PROPOSED WORK.

CONTINUED ON SHEET C-3.3

- LEGEND:
- HIGH FRICTION RED SURFACE TREATMENT
 - HIGH FRICTION GREEN SURFACE TREATMENT
 - DIRECTION OF TRAFFIC FLOW



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Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	



Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	PAVEMENT MARKING AND SIGNAGE PLAN 4

Sheet	C-9.4
File No.	

PLOT DATE: 9/25/2022 10:11:14 AM USER: DAVIS, JACQUELINE FILENAME: c:\pwworking\east1\p0168880\C-21-24_Pavement Marking.dwg

PROPOSED SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (mm)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET	
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE MKR		BACK-GROUND	LEGEND	BORDER				
R1-1	30	30		SEE STANDARDS ⁽¹⁾			6	SEE STANDARDS ⁽¹⁾			-	6.25	37.5	
R1-2 (BIKE)	22	19.5					1				-	2.98	2.98	
R3-7R	30	30					3				-	6.25	18.75	
R5-1	30	30					2				-	6.25	12.50	
R5-1 (BIKE)	20	20					1				-	6.25	6.25	
R5-3sP	30	12					3			MNT W/R3-7R	2.50	7.50		
R6-1	36	12					4				-	3.00	12.00	
R6-2L	12	18					1				-	1.50	1.50	
R6-2R	12	18					1				-	1.50	1.50	
R10-15R	30	30					7				-	6.5	45.50	
R10-24	9	15					3				-	0.94	2.82	
W11-2	30	30					12				-	6.25	75.00	
W14-1	30	30					2				-	6.25	12.50	
W16-7pL	24	12					6				-	2.00	12.00	
W16-7pR	24	12					6				-	2.00	12.00	
①	TOTAL NUMBER OF SIGNS						58	TOTAL AREA OF SIGNS (SQUARE FEET)						260.3 SF

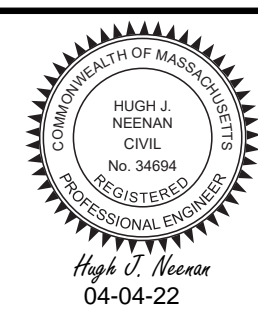
IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (mm)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET	
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE MKR		BACK-GROUND	LEGEND	BORDER				
CT-110R	12	18		SEE STANDARDS ⁽¹⁾			3	SEE STANDARDS ⁽¹⁾			-	1.50	4.50	
CT-110	12	18					7				-	1.50	10.50	
CT-110L	12	18					1				-	1.50	1.50	
CT-210	12	18					2				-	1.50	3.00	
CT-210L	12	18					4				-	1.50	6.00	
CT-210R	12	18					5				-	1.50	7.50	
CT-227	12	18					7				-	1.50	12.00	
CT-227L	12	18					4				-	1.50	6.00	
①	TOTAL NUMBER OF SIGNS						33	TOTAL AREA OF SIGNS (SQUARE FEET)						51.0 SF

NOTES:

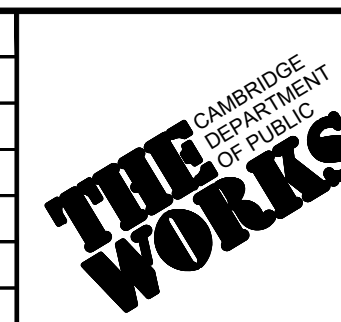
- ALL TRAFFIC SIGNS SHALL CONFORM TO FEDERAL HIGHWAY ADMINISTRATION'S MANUAL ON UNIFORM CONTROL DEVICES (MUTCD, OR THE MANUAL) CURRENT EDITION, 2004 STANDARD HIGHWAY SIGNS WITH 2012 SUPPLEMENT, AND CITY OF CAMBRIDGE TRAFFIC DEPARTMENT SIGN SPECIFICATION 2017
- CONTRACTOR RESPONSIBLE FOR ENSURING THAT PROPOSED SIGN WORDING AND RESTRICTIONS MATCH EXISTING SIGN TO BE REPLACED
- UNLESS OTHERWISE NOTED, ALL POSTS TO BE MASSDOT U-CHANNEL
- CONTRACTOR SHALL COORDINATE WITH MBTA FOR BUS ROUTE NUMBERS

PLOT DATE=3/25/2022 10:11:21 AM USER=DAVIS, JACQUELINE FILENAME=c:\pwworking\east01\06168901\1-2 Sign Summary.dwg

HDR ENGINEERING, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MASSACHUSETTS 02110-2378
(617) 357-7700



Scale	AS NOTED		
Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		REVISIONS



Client	CITY OF CAMBRIDGE, MA	
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	
Drawing	TRAFFIC SIGN SUMMARY 1	

Sheet	T-1.1
File No.	

PLOT DATE=3/25/2022 10:11:22 AM USER=DAVIS, JACQUELINE FILENAME=c:\pwworking\as01\00166890\T-1.2 Sign Summary.dwg

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (mm)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE MKR		BACK-GROUND	LEGEND	BORDER			
CT-227R	12	18		SEE STANDARDS ⁽¹⁾			6	SEE STANDARDS ⁽¹⁾			-	1.50	9.00
CT-302L	12	18					2				-	1.50	3.00
CT-302R	12	18					2				-	1.50	3.00
CT-390(4T)	12	18					11				-	1.50	16.50
CT-390(4W)	12	18					10				-	1.50	15.00
CT-800LA	12	18					1				-	1.50	1.50
CT-800RA	12	18					1				-	1.50	1.50
①	TOTAL NUMBER OF SIGNS						33	TOTAL AREA OF SIGNS (SQUARE FEET)				49.5 SF	

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (mm)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE MKR		BACK-GROUND	LEGEND	BORDER			
D3-1	36	12		SEE STANDARDS ⁽¹⁾			2	SEE STANDARDS ⁽¹⁾			-	3.0	6.00
D3-2	36	12					5				-	3.0	15.00
D3-3	36	12					1				-	3.0	3.00
D3-4	36	12					1				-	3.0	3.00
D3-5	54	18					1				-	6.75	6.75
D3-6	36	12					1				-	3.0	3.00
D3-7	36	12					1				-	3.0	3.00
D3-8	36	12					1				-	3.0	3.00
D3-9	36	12					1				-	3.0	3.00
①	TOTAL NUMBER OF SIGNS						14	TOTAL AREA OF SIGNS (SQUARE FEET)				45.75 SF	

NOTES:

- ALL TRAFFIC SIGNS SHALL CONFORM TO FEDERAL HIGHWAY ADMINISTRATION'S MANUAL ON UNIFORM CONTROL DEVICES (MUTCD, OR THE MANUAL) CURRENT EDITION, 2004 STANDARD HIGHWAY SIGNS WITH 2012 SUPPLEMENT, AND CITY OF CAMBRIDGE TRAFFIC DEPARTMENT SIGN SPECIFICATION 2017
- CONTRACTOR RESPONSIBLE FOR ENSURING THAT PROPOSED SIGN WORDING AND RESTRICTIONS MATCH EXISTING SIGN TO BE REPLACED
- UNLESS OTHERWISE NOTED, ALL POSTS TO BE MASSDOT U-CHANNEL
- CONTRACTOR SHALL COORDINATE WITH MBTA FOR BUS ROUTE NUMBERS

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 99 HIGH STREET, SUITE 2300
 BOSTON, MASSACHUSETTS 02110-2378
 (617) 357-7700

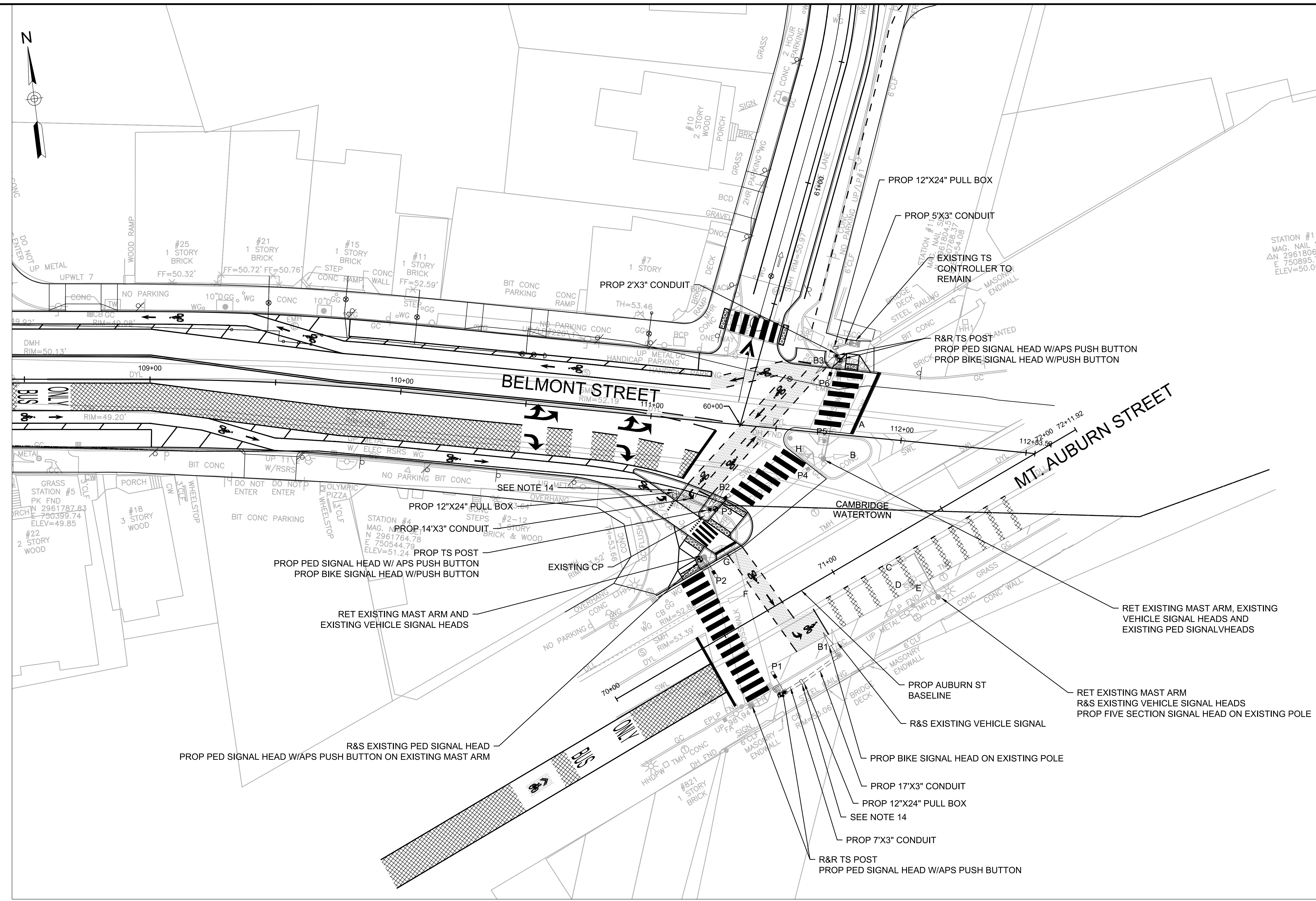
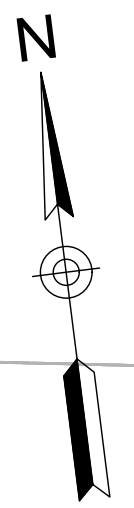


Scale	AS NOTED		
Date	MARCH 2022		
Job No.			
Designed by	JCD		
Drawn by	JCD		
Checked by	HJN	No.	Description
Approved by	HJN		REVISIONS



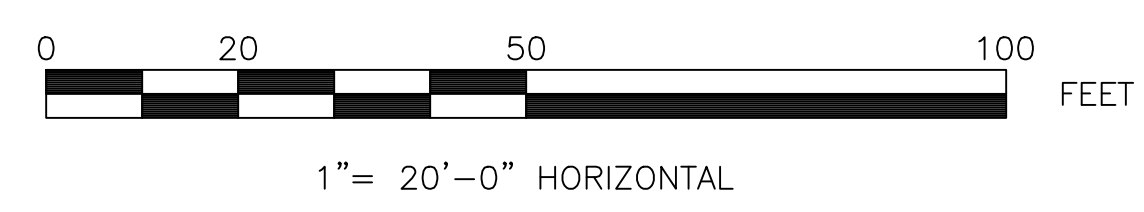
Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	TRAFFIC SIGN SUMMARY 2

Sheet	T-1.2
File No.	



- NOTES:
1. FOR TRAFFIC SIGNAL DETAILS, SEE SHEET T-2.2.
 2. ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AND CONDUIT SHALL REMAIN UNLESS OTHERWISE NOTED.
 3. MINIMUM OF 36" CLEARANCE IS REQUIRED ON ALL SIDEWALKS.
 4. WORK ON THE TRAFFIC SIGNAL SYSTEM SHALL BE IN ACCORDANCE WITH APPROVED TRAFFIC MANAGEMENT PLANS, STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND AS DIRECTED BY THE ENGINEER.
 5. POST-MOUNTED SIGNALS SHALL HAVE 2-FT. MINIMUM CLEARANCE FROM THE FACE OF THE CURB LINE TO THE VISOR.
 6. THE FINAL LOCATION OF SIGNAL EQUIPMENT MAY BE ADJUSTED IN THE FIELD WITH THE APPROVAL OF THE ENGINEER.
 7. ALL TRAFFIC SIGNAL CONDUIT SHALL BE 3 IN. TYPE NM PLASTIC (UL).
 8. ALL SIGNAL EQUIPMENT R&S SHALL BE STACKED AS DIRECTED BY THE CITY OF CAMBRIDGE.
 9. ALL TRAFFIC SIGNAL MAST ARMS, POLES, SIGNAL HOUSINGS AND CONTROLLER CABINETS SHALL BE PAINTED BLACK.
 10. ALL PROPOSED TRAFFIC AND PEDESTRIAN SIGNALS SHALL BE LED.
 11. ALL VEHICLE AND BICYCLE SIGNALS SHALL BE MOUNTED 10 FT. HIGH.
 12. ALL PEDESTRIAN SIGNALS SHALL BE MOUNTED 8 FT. HIGH.
 13. ALL NEW PEDESTRIAN AND BICYCLE SIGNALS AND EQUIPMENT SHALL USE THE EXISTING CONDUIT, UNLESS OTHERWISE NOTED ON THE PLANS.
 14. CONSTRUCT ADDITIONAL CONDUIT FROM NEW PULL BOX TO EXISTING TRAFFIC SIGNAL CONDUIT. THE EXISTING CONDUIT TO BE LOCATED IN THE FIELD.

STATION #1
MAG. NAIL S
ΔN 2961806.6
E 750895.7
ELEV=50.06



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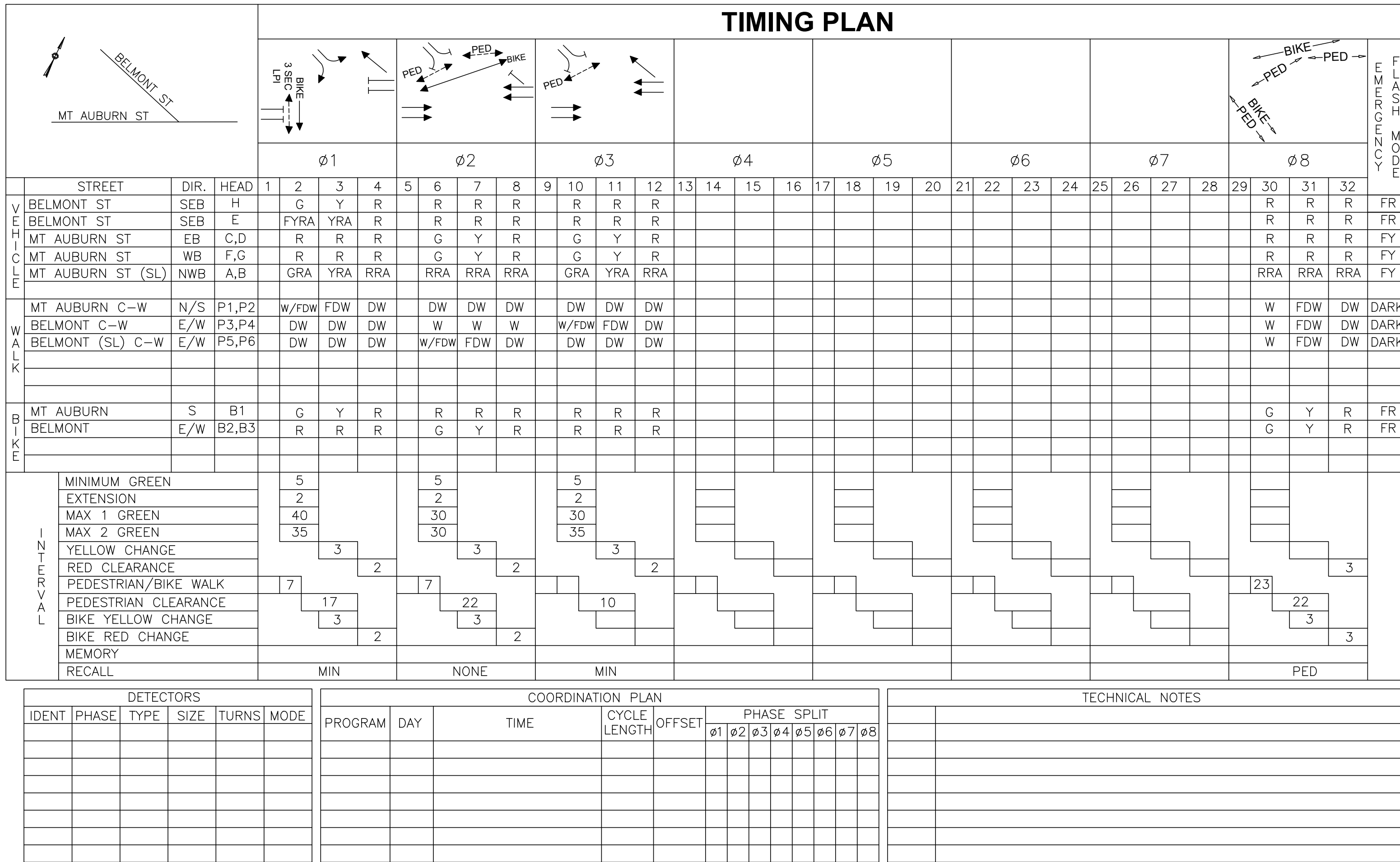
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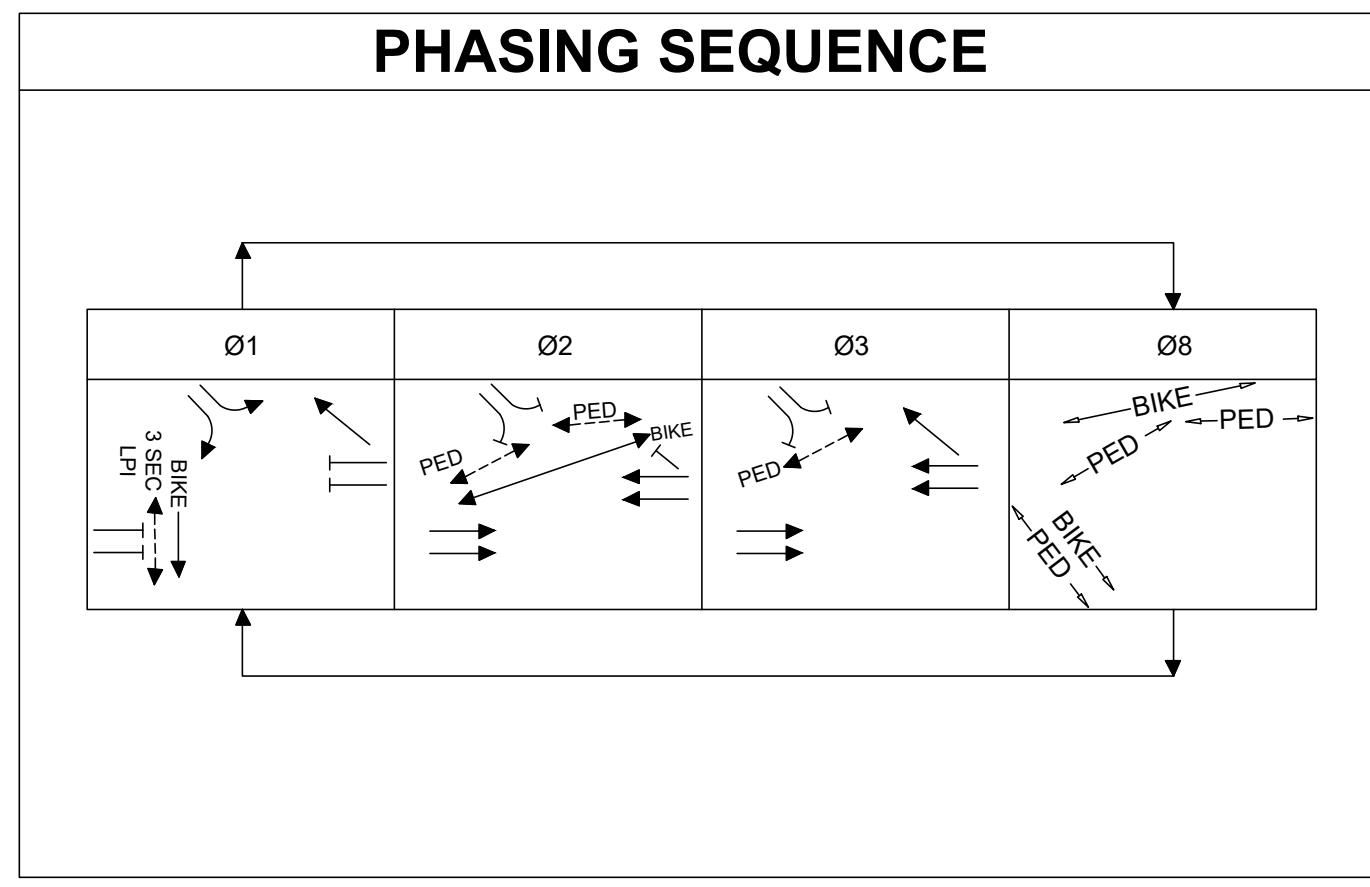
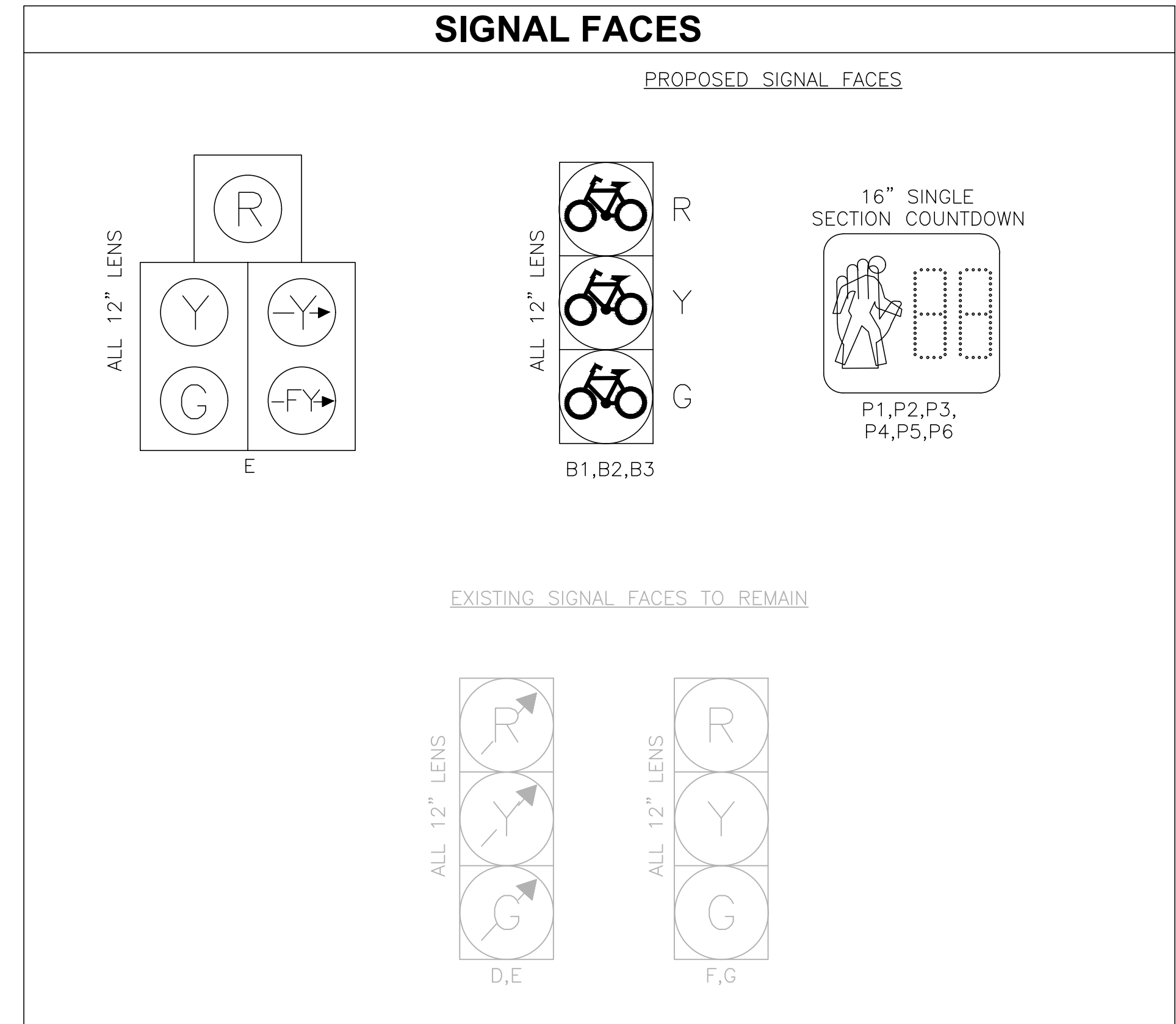
Scale	AS NOTED			
Date	MARCH 2022			
Job No.				
Designed by	JCD			
Drawn by	JCD			
Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	



Client	CITY OF CAMBRIDGE, MA	Sheet	T-2.1
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	TRAFFIC SIGNAL PLAN 1		



LPI = LEADING PEDESTRIAN INTERVAL



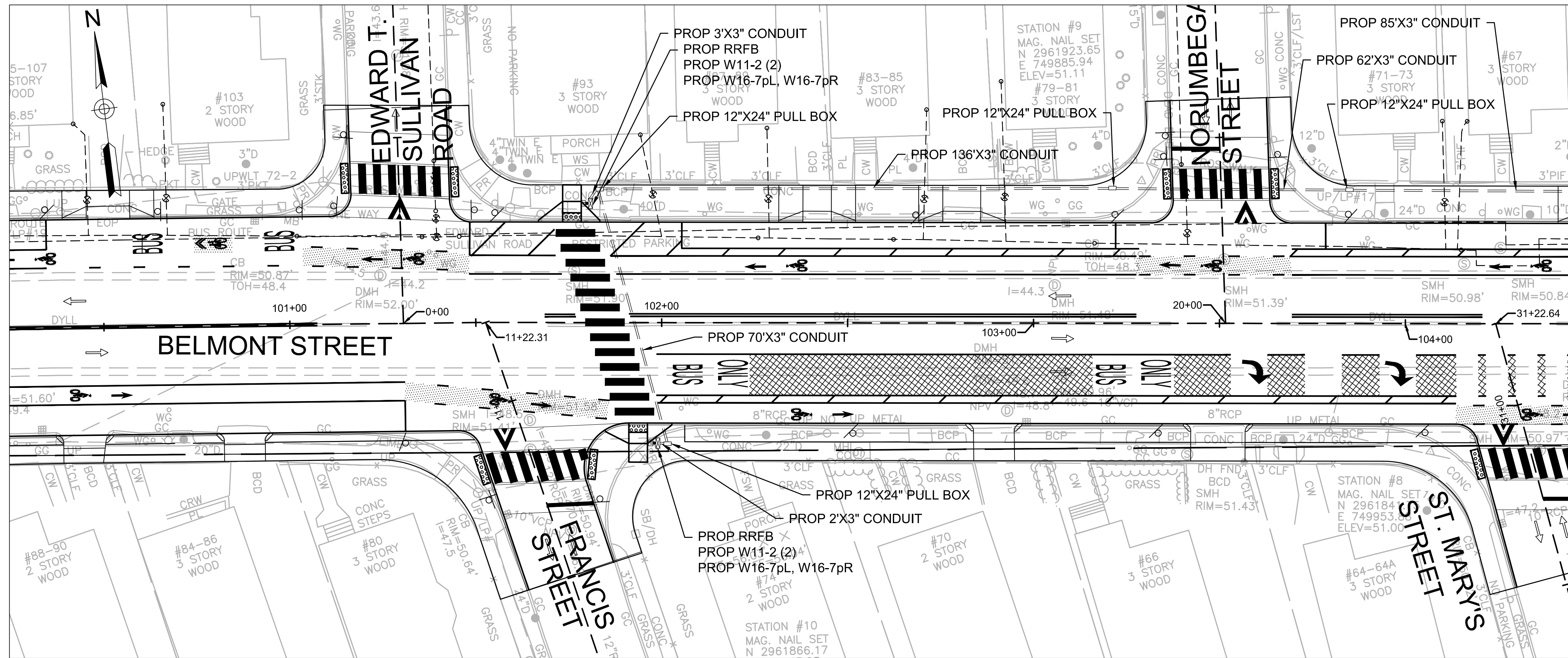
- NOTES:**
- FOR TRAFFIC SIGNAL PLAN SEE SHEET T-2.1
 - SIGNAL TIMINGS SHOWN IS AS PROPOSED BY THE CITY OF CAMBRIDGE TRAFFIC DEPARTMENT.
 - WALK AND FLASHING DON'T WALK TIMES SHALL FULLY ENCOMPASS THE VEHICULAR GREEN (VIA "REST IN WALK" MODE) FOR ALL PHASES DURING ALL TIME PERIODS.
 - IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THAT CLEARANCE INTERVAL.
 - FLASHING OPERATION IS FOR EMERGENCY ONLY. THE SIGNAL SHALL PROVIDE STOP AND GO OPERATION 24 HOURS DAILY.
 - ø4, ø5, ø6, ø7 SHALL NOT BE USED.
 - MINIMUM OF 36" CLEARANCE IS REQUIRED ON ALL SIDEWALKS.
 - WORK ON THE TRAFFIC SIGNAL SHALL BE IN ACCORDANCE WITH APPROVED TRAFFIC MANAGEMENT PLANS, STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND AS DIRECTED BY THE ENGINEER.
 - POST-MOUNTED SIGNALS SHALL HAVE A 2-FT. MINIMUM CLEARANCE FROM THE FACE OF THE CURB LINE TO THE VISOR.
 - THE FINAL LOCATION OF SIGNAL EQUIPMENT MAY BE ADJUSTED IN THE FIELD WITH THE APPROVAL OF THE ENGINEER.
 - ALL TRAFFIC SIGNAL CONDUIT SHALL BE 3 IN. TYPE NM PLASTIC (UL)
 - ALL SIGNAL EQUIPMENT DESIGNATED R&S SHALL BE STACKED AS DIRECTED BY THE CITY OF CAMBRIDGE.
 - ALL TRAFFIC SIGNAL MAST ARMS, POLES, SIGNAL HOUSINGS, AND CONTROLLER CABINETS SHALL BE PAINTED BLACK.
 - ALL PROPOSED PEDESTRIAN AND BICYCLE SIGNALS SHALL BE LED.
 - ALL VEHICLE AND BICYCLE SIGNALS SHALL BE MOUNTED 10 FT. HIGH; PEDESTRIAN SIGNALS SHALL BE MOUNTED 8 FT. HIGH.

MAJOR ITEMS REQUIRED		
PAY ITEM	QUANTITY	ITEM
815.1	1	10' SIGNAL POST AND FOUNDATION (STEEL) WITH BLACK PAINT
	4	PEDESTRIAN SIGNAL HEAD, SINGLE SECTION W/COUNTDOWN TIMER (16" COUNTDOWN L.E.D.)
	3	1 WAY, 3 SECTION, BICYCLE HOUSING (12" L.E.D)
	4	APS PEDESTRIAN PUSH BUTTON
	1	SIGNAL POST AND BASE PEDESTAL - 10 FOOT
	1	SIGNAL HEAD 1 WAY, FIVE SECTION 12 INCH LENS
811.32	3	PULL BOX-12"x24" (SD2.031) (CONTINGENCY QUANTITY)
		PLUS ALL NECESSARY DUCT, CABLE, ATTACHMENT HARDWARE, LABOR MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION.

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Date	MARCH 2022			
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Checked by	HJN	No.	Description	Date
Approved by	HJN		REVISIONS	

Client	CITY OF CAMBRIDGE, MA	Sheet	T-2.2
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT	File No.	
Drawing	TRAFFIC SIGNAL PLAN 2		

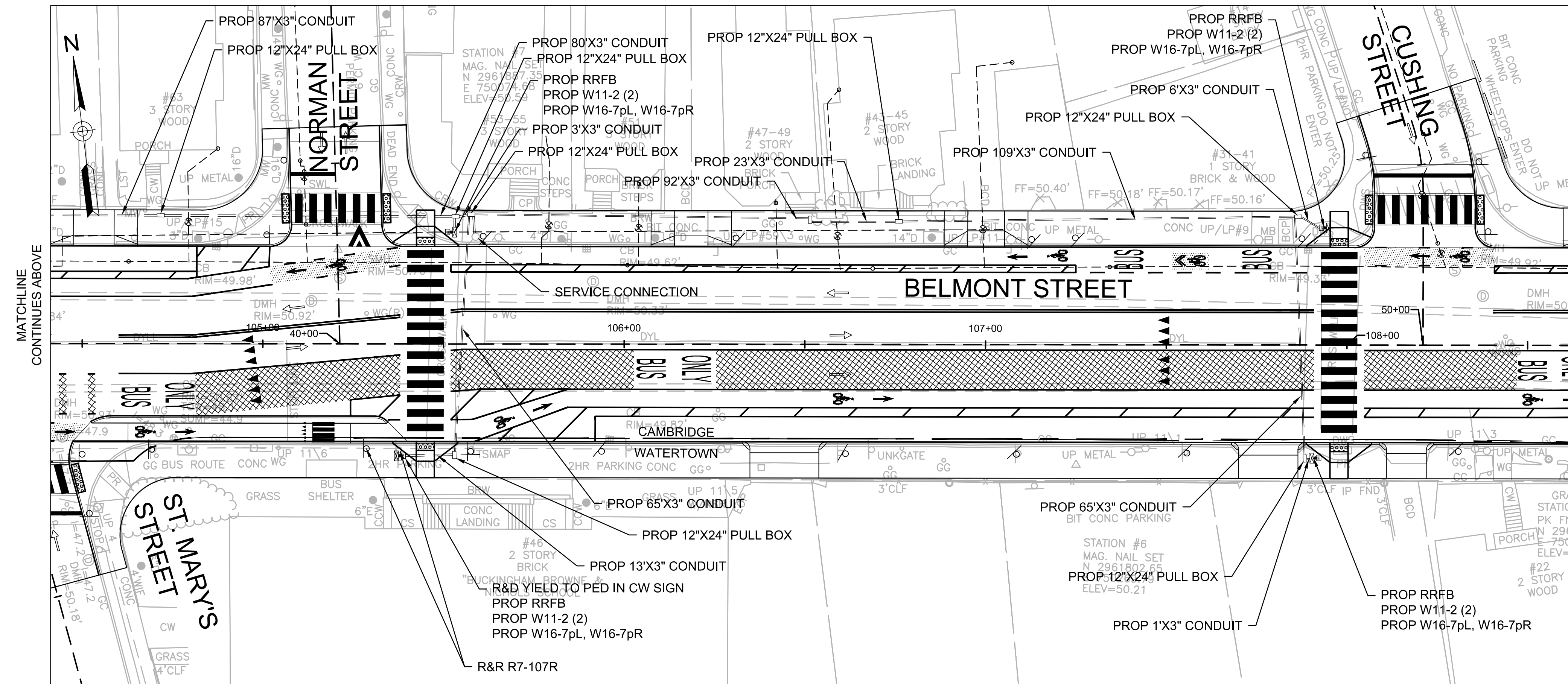
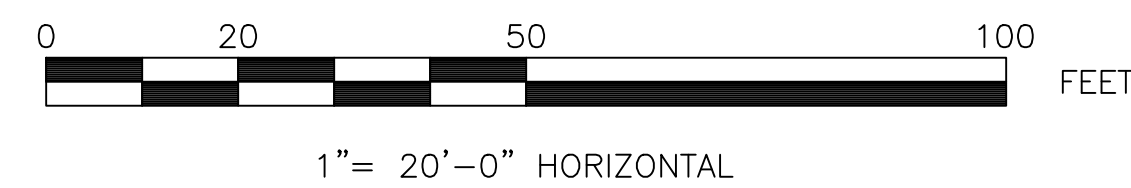


NOTES:

1. POST-MOUNTED SIGNALS SHALL HAVE 2-FT. MINIMUM CLEARANCE FROM THE FACE OF THE CURB LINE TO THE VISOR.
2. THE FINAL LOCATION OF SIGNAL EQUIPMENT MAY BE ADJUSTED IN THE FIELD WITH THE APPROVAL OF THE ENGINEER.
3. ALL TRAFFIC SIGNAL CONDUIT SHALL BE 3 IN. TYPE NM PLASTIC (UL).
4. EXISTING ELECTRICAL SERVICE POWERING THE EXISTING MAST ARM SHALL BE USED TO PROVIDE SERVICE TO THE RECTANGULAR RAPID FLASHING BEACONS

MATCHLINE CONTINUES BELOW

MAJOR ITEMS REQUIRED		
PAY ITEM	QUANTITY	ITEM
824.211	1	FLASHING BEACON CONTROLLER
	6	5-LIGHT RECTANGULAR RAPID FLASHING BEACON
	6	TRAFFIC SIGNAL POST AND BASE STANDARD - 12" STEEL
	6	PEDESTRIAN PUSHBUTTON, SIGN AND SADDLE
	1	SERVICE CONNECTION
	12	W11-2 SIGNS (30"X30", SEE 2009 MUTCD STANDARDS)
	6	W16-7pL (24"X12", SEE 2009 MUTCD STANDARDS)
811.32	15	PULL BOX-12"X24" (CONTINGENCY QUANTITY)
		PLUS ALL MISCELLANEOUS EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING FLASHING BEACON SIGNAL



MATCHLINE CONTINUES ABOVE



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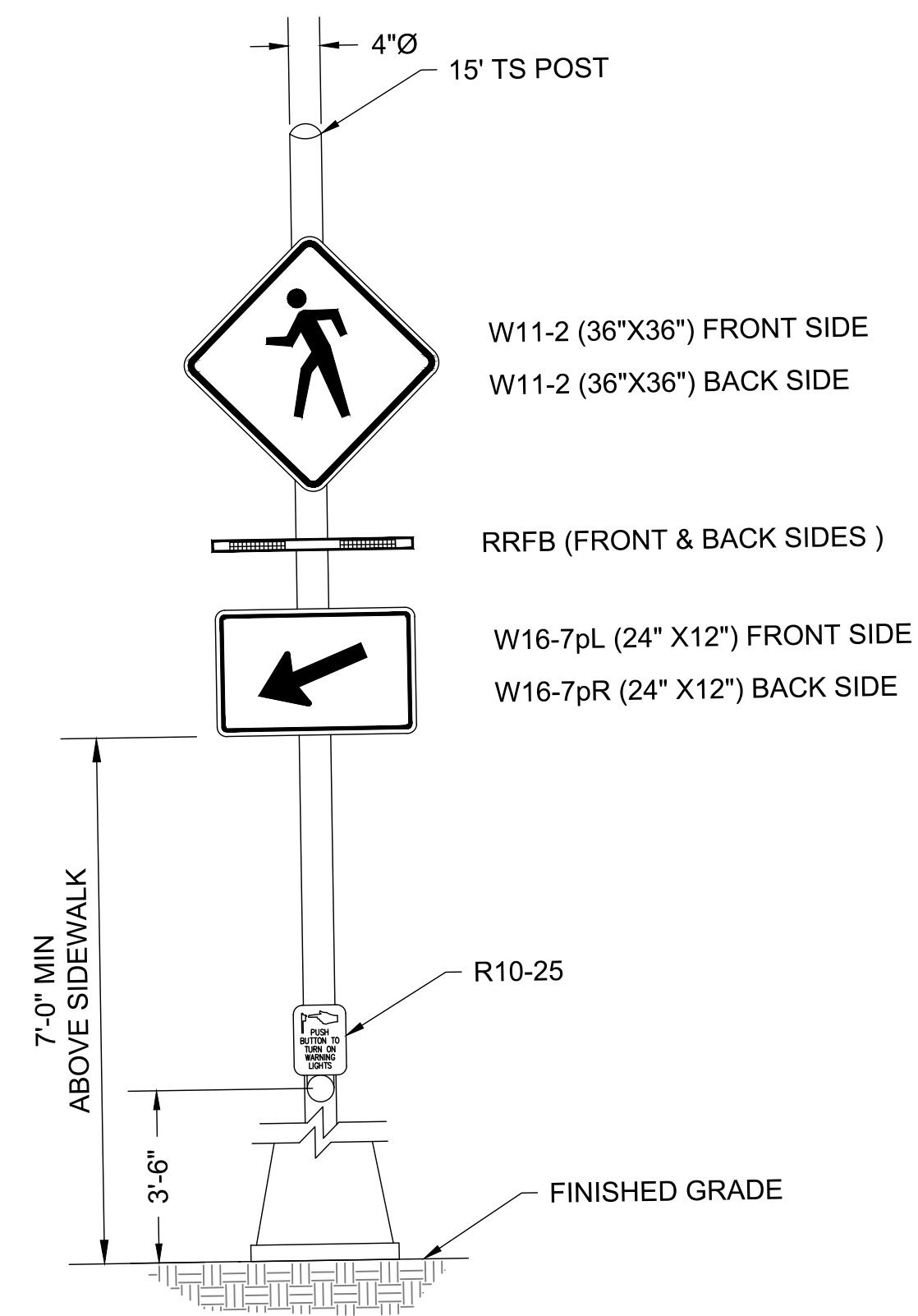
Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	TRAFFIC SIGNAL PLAN 3

Sheet	T-2.3
File No.	

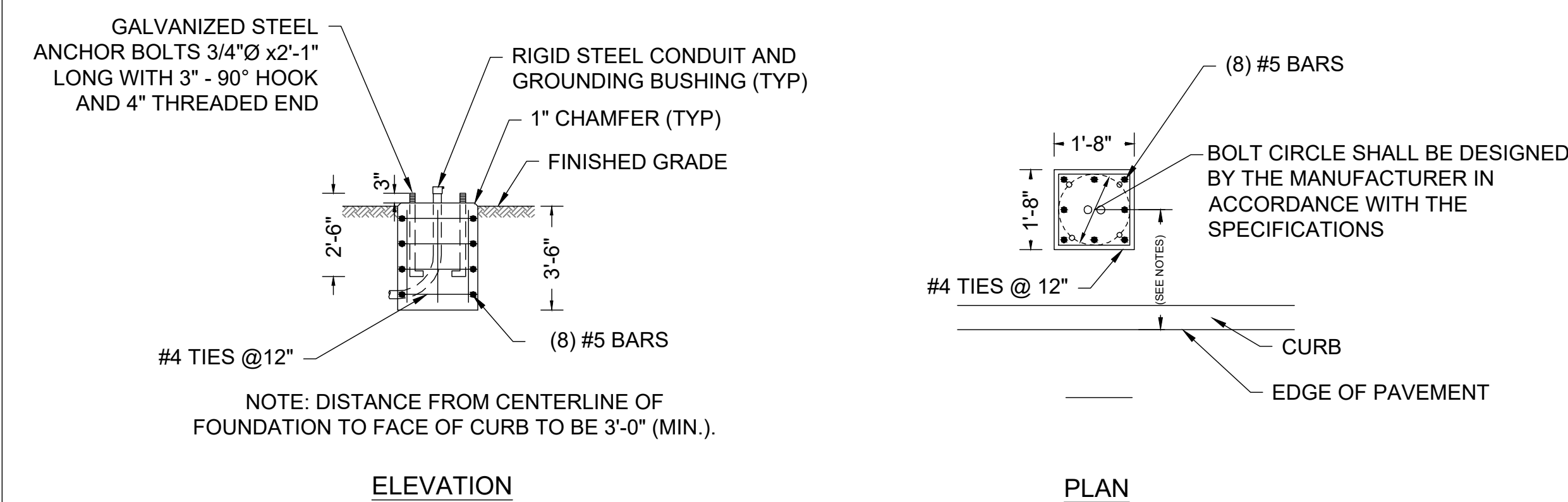
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PLOT DATE: 9/25/2022 10:11:55 AM USER: DAVIS, JACQUELINE FILENAME: c:\pwworking\east1\c0168801\T-3-4_Signal Plans.dwg

RECTANGULAR RAPID FLASHING BEACON DETAIL



FLASHING BEACON FOUNDATION DETAILS



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Client	CITY OF CAMBRIDGE, MA
Project	BELMONT & HOLWORTHY STREET & SIDEWALK DESIGN PROJECT
Drawing	TRAFFIC SIGNAL PLAN 4

Sheet	T-2.4
File No.	