

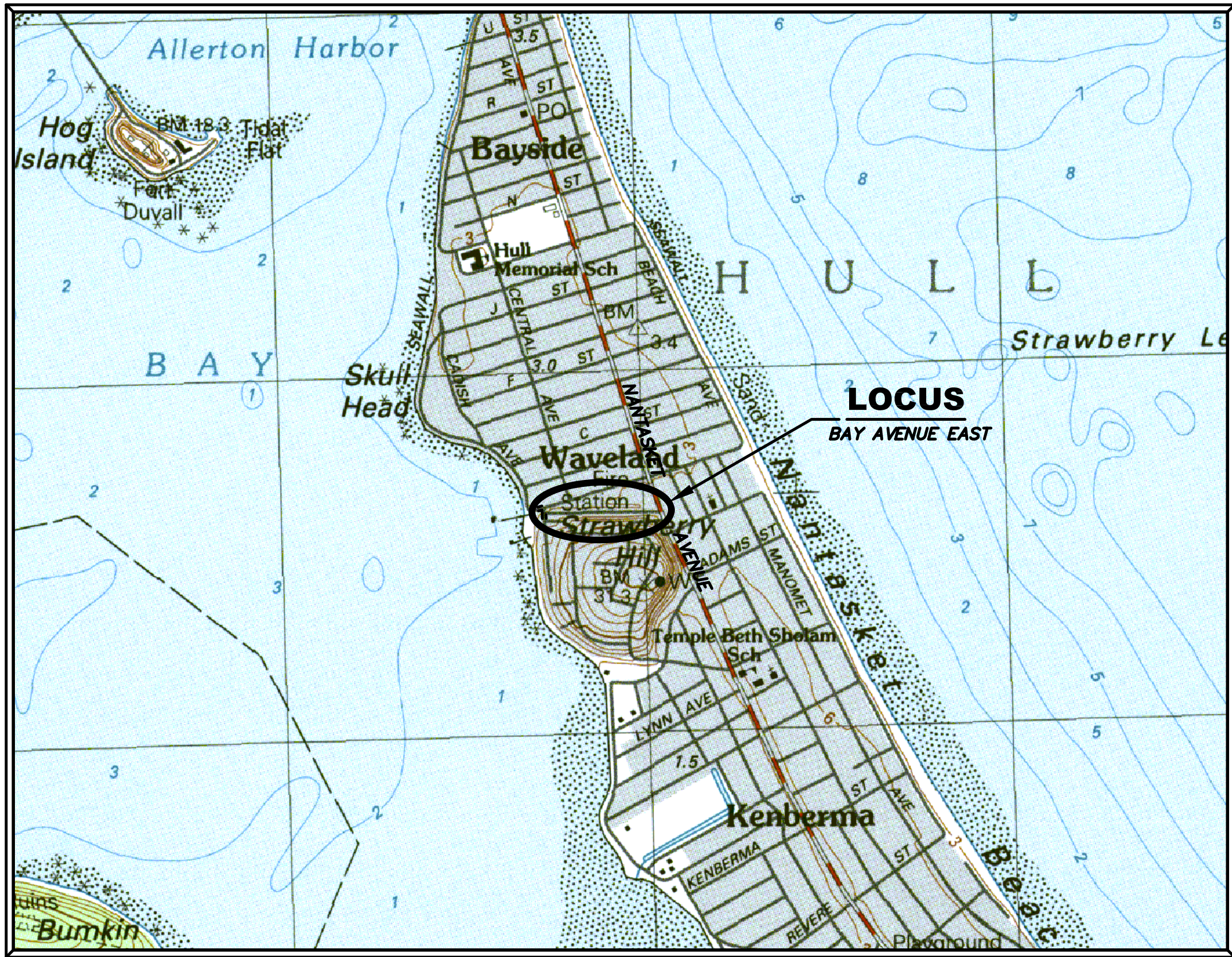
TOWN OF HULL, MASSACHUSETTS
BAY AVENUE EAST ROADWAY-INFRASTRUCTURE
IMPROVEMENT PROJECT
FEBRUARY 2016

DEPARTMENT OF PUBLIC WORKS

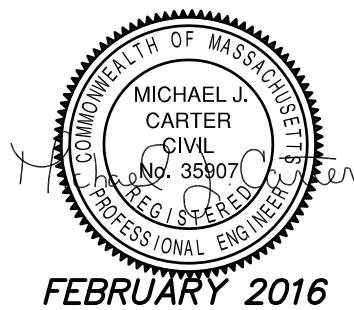
JOSEPH A. STIGLIANI, DIRECTOR

PLANNING & COMMUNITY DEVELOPMENT

ROBERT FULTZ, DIRECTOR



LOCUS PLAN
SCALE : 1" = 1000'±



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ABBREVIATIONS

ACP	ASBESTOS CEMENT PIPE
BND	BOUND
BLDG	BUILDING
BIT CONC	BITUMINOUS CONCRETE
BM	BENCH MARK
BRK	BRICK
CB	CATCH BASIN
CBLP	CONCRETE BOUND LEAD PLUG
CS	COMBINED SEWER
C	CONDUIT
CL	CENTERLINE
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CSMH	COMBINED SEWER MANHOLE
CST	COBBLESTONE
CULV	CULVERT
CO	COUNTY
CONC	CONCRETE
C.L.D.I.	CONCRETE LINED DUCTILE IRON
CLF	CHAIN LINK FENCE
DIP	DUCTILE IRON PIPE
DR	DRIVE
DMH	DRAIN MANHOLE
EMH	ELECTRIC MANHOLE
FAB	FIRE ALARM BOX
EOP	EDGE OF PAVEMENT
EOG	EDGE OF GRAVEL
FDMH	FIRE DEPT. MANHOLE
GAR	GARAGE
GC	GRANITE CURB
GG	GAS GATE
GS	GAS SERVICE
GIP	GALVANIZED IRON PIPE
GD	GROUND
HB	HIGHWAY BOUND
HW	HEADWALL
HSE	HOUSE
HOR	HORIZONTAL
HYD	HYDRANT
HP	HIGH PRESSURE
L	LEAD
LP	LIGHT POLE
MH	MANHOLE
MB	MAIL BOX
MHB	MASSACHUSETTS HIGHWAY BOUND
NG	NATURAL GAS
PE	POLYETHYLENE PIPE
R	APPROXIMATE PROPERTY LINE
RCP	REINFORCED CONCRETE PIPE
RET WALL	RETAINING WALL
ROW	APPROXIMATE RIGHT OF WAY
RR	RAILROAD
SB	STONE BOUND
S	SIGN
SMH	SEWER MANHOLE
STA	STATION
S	SEWER
SS	SEWER SERVICE
STL	STEEL
SW	SIDEWALK
TMH	TELEPHONE MANHOLE
UP	UTILITY POLE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
W	WATER MAIN
WG	WATER GATE
WD	WOOD
WIP	WROUGHT IRON PIPE
WMH	WATER MANHOLE
WS	WATER SERVICE
WSO	WATER SERVICE SHUTOFF
WV	WATER VALVE

SYMBOLS

1. THE FOLLOWING SYMBOLS ARE USED TO IDENTIFY UTILITY APPURTENANCES.
2. THE SIZE AND TYPE IS NOTED ON THE PLANS ADJACENT TO THE SYMBOL.

SYMBOLS

	_____	WATER GATE
	_____	SERVICE GATE
	_____	SEWER MANHOLE
	_____	DRAIN MANHOLE
	_____	TEST PIT
	_____	CONCRETE HEADWALL
	_____	CATCH BASIN
	_____	CONCRETE BOUND
	_____	EXISTING HYDRANT
	_____	GUY WIRE/GUY POLE
	_____	UTILITY POLE
	_____	IRON PIN
	_____	SIGN
	_____	BENCH MARK
	_____	WATER SHUT OFF
	_____	MONITORING WELL
	_____	CURBING
	_____	GAS GATE
	_____	LIGHT POLE
	_____	BUSHES
	_____	TREE
	_____	STONE WALL
	_____	FENCE

LEGEND

EXISTING	PROPOSED		
-----	W	_____	WATER LINE
-----	G	_____	GAS LINE
-----	E	_____	ELECTRIC CONDUIT (SINGLE OR MULTIPLE DUCTS)
--T-- --T--	TEL	—T— —T—	TELEPHONE CONDUIT (SINGLE OR MULTIPLE DUCTS)
-----	CS	_____	COMBINED SEWER
-----	CSO	_____	COMBINED SEWER OVERFLOW
-----	D	_____	STORM DRAIN LINE
-----	S	_____	SANITARY SEWER LINE
-----	FM	— — —	SEWER FORCE MAIN
--//-- --//--	FA	—//— —//—	FIRE ALARM CONDUIT (SINGLE OR MULTIPLE DUCTS)
--T-- --T--	F.O.	—T— —T—	FIBER OPTICS LINE
x22.50	x22.50	_____	SPOT ELEVATION

BAY AVENUE EAST
RECONSTRUCTION NOTES

- 1.) ALL TRENCHES WILL BE PUDDLED OR JETTED WITH WATER TO ALLOW PROPER SETTLEMENT. TRENCHES THAT CANNOT BE JETTED WILL BE MECHANICALLY COMPACTED AS DETERMINED BY THE ENGINEER. ALL TRENCHES WILL BE COMPACTED TO 95% COMPACTION. INCLUDE PAYMENT UNDER ASSOCIATED PIPE ITEMS.
- 2.) AFTER THE JETTING PROCESS IS COMPLETED, THE CONTRACTOR SHALL MAINTAIN TRENCH GRAVEL FLUSH TO EXISTING GRADE UNTIL BAY AVENUE EAST IS RECLAIMED. IF REQUIRED BY THE ENGINEER, TRENCH PAVING SHALL BE INSTALLED TO STABILIZE AREAS AS NEEDED. PAYMENT UNDER ITEMS 5E & 5F.
- 3.) THE CONTRACTOR WILL ALLOW THE TRENCHES TO SETTLE THE REQUIRED PERIOD (90 DAY MIN) AS STATED IN THE SPECIFICATIONS PRIOR TO RECLAIMING THE ENTIRE WIDTH OF BAY AVE EAST.
- 4.) PRIOR TO RECLAIMING BAY AVE EAST FROM STATION 0+00 TO STATION 10+60 THE CONTRACTOR SHALL COMPLETE ALL EXCAVATING AND PREPARING SUBGRADE REQUIRED TO GRADE THE RECLAIMED BASE TO THE PROPOSED PLAN AND PROFILE AND ALSO LOWER ALL CASTINGS AS SPECIFIED IN SECTION 02220 OF THE CONTRACT SPECIFICATIONS.
- 5.) THE CONTRACTOR SHALL FURNISH AND AND INSTALL OR REMOVE AND REPLACE SIGNS AS REQUIRED TO PERFORM THE PROPOSED WORK.
- 6.) THE CONTRACTOR SHALL BE PAID FOR WORK REQUIRED TO SUPPORT OR REMOVE AND REPLACE EXISTING STRUCTURES AND UTILITY LINES ADJACENT TO OR WITHIN THE LIMITS OF TRENCH EXCAVATION UNDER LUMP SUM ITEM NO. 7B.
- 7.) THE CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC ON BAY AVENUE EAST AT ALL TIMES DURING THE CONSTRUCTION, AND SHALL MAINTAIN ACCESS TO ALL RESIDENTIAL DRIVEWAYS AND ACCESS WAYS.
- 8.) THE CONTRACTOR SHALL RECLAIM THE ENTIRE WIDTH OF PROPOSED ROAD LAYOUT FOR BAY AVE EAST. THE LIMITS (EDGE OF PAVEMENT) OF THE PROPOSED PAVED SURFACE ARE SHOWN IN THE PLAN VIEW OF THESE CONSTRUCTION DRAWINGS.
- 9.) AFTER PULVERIZING THE EXISTING INPLACE ASPHALT AND UNDERLYING MATERIALS (TOTAL OF 12" DEPTH), THE CONTRACTOR SHALL PLACE, GRADE AND COMPACT THE EXISTING RECLAIMED BASE COURSE TO A 12" DEPTH AS SHOWN ON THE TYPICAL ROADWAY CROSS-SECTION PLAN TO ALLOW THE PLACEMENT OF A 2-1/2" BASE COURSE (BINDER COURSE PAVEMENT - M3.11.03 - TABLE "A") AND 1-1/2" WEARING COURSE (TOP COURSE PAVEMENT - M3.11.03 - TABLE "A").
- 10.) ALL PROPOSED CUTS AND FILLS REQUIRED TO GRADE THE RECLAIMED MATERIAL TO A 12" DEPTH SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 5B.
- 11.) THE CONTRACTOR SHALL FINE GRADE THE EXISTING RECLAIMED BASE COURSE MATERIAL NO MORE THAN 24 HOURS PRIOR TO THE PLACEMENT OF THE 2 1/2" BASE COURSE PAVEMENT. ALL GRADING, COMPACTION AND DUST CONTROL ASSOCIATED WITH THE RECLAIMED BASE COURSE SHALL BE INCLUDED IN THE PRICE OF ITEM 4B.
- 12.) THE CONTRACTOR SHALL GRADE THE EXISTING RECLAIMED BASE COURSE MATERIAL TO MATCH PROPOSED CENTERLINE GRADE AS SHOWN ON THE PROPOSED PROFILE AND TO MEET THE PAVEMENT REQUIREMENTS SHOWN ON THE PROPOSED ROADWAY CROSS SECTION PLAN.
- 13.) THE COSTS ASSOCIATED WITH THE EXCAVATION, PLACEMENT AND DISPOSAL OF SURPLUS SUBBASE MATERIAL SHALL BE INCLUDED IN THE PRICE OF THE RECLAIMED BASE COURSE ITEM 5B. SURPLUS SUBBASE MATERIAL IS THE PROPERTY OF THE CONTRACTOR. SEE SECTIONS 01025/02220, ITEM 5B OF THE CONTRACT SPECIFICATIONS.
- 14.) THE CONTRACTOR SHALL STOCKPILE AND RETAIN SUFFICIENT SURPLUS SUBBASE AND RECLAIMED PAVEMENT SUBBASE MATERIALS TO USE AS NEEDED IN THE ENTIRE PROJECT AREA. NO ADDITIONAL PAYMENT FOR PLACEMENT SHALL BE MADE. PAYMENT UNDER ITEM 5B. SURPLUS SUBBASE AND RECLAIMED PAVEMENT SUBBASE MATERIAL SHALL BE USED ONSITE PRIOR TO GRAVEL BORROW MATERIAL.
- 15.) THE CONTRACTOR SHALL REMOVE AND REPLACE OR SUPPORT UTILITY POLES WITHIN 10 FEET OF THE PROPOSED PIPE CENTERLINE OR AS DIRECTED BY THE ENGINEER. INCLUDE ALL ASSOCIATED COSTS UNDER LUMP SUM ITEM NO. 7B.
- 16.) THE CONTRACTOR SHALL LOAM AND SEED ALL DISTURBED AREAS.
- 17.) THE CONTRACTOR SHALL PROVIDE GENERAL CLEAN-UP TO THE ENTIRE PROJECT SITE. INCLUDE PAYMENT UNDER UNDER LUMP SUM ITEM NO. 7B.
- 18.) THE ENGINEER IN THE FIELD SHALL DETERMINE WHICH DRIVEWAYS SHALL REQUIRE REMOVAL OF EXISTING PAVEMENT AND REPLACEMENT TO TRANSITION TO THE PROPOSED BACK OF SIDEWALK AND DRIVEWAY APRONS
- 19.) ALL WORK REQUIRED TO LOWER, RAISE, AND EXTEND THE EXISTING CASTINGS & VALVE BOXES TO THE PROPOSED FINISH GRADE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 5B. ALL WATER AND GAS GATE BOXES SHALL BE REPLACED TO THE VALVE AND PAID UNDER THE ASSOCIATED ITEM.
- 20.) ALL CASTINGS, GATE BOXES, ETC. DAMAGED DURING RECONSTRUCTION SHALL BE SUPPLIED AND REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. THE CONTRACTOR SHALL INCLUDE THE COST IN ALL BID ITEMS.

STOCKPILED EXCAVATED MATERIALS

- 1.) STOCKPILED SUITABLE EXCAVATED MATERIAL (EXCAVATED UNDER ITEM 5B) SHALL BE USED ONSITE FOR ROADWAY SUBGRADE, MISCELLANEOUS DRIVEWAYS AND OTHER AREAS REQUIRING SUITABLE GRAVEL SUBBASE. NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE PLACEMENT OF THIS MATERIAL.

RAISING CASTINGS

BAY AVENUE EAST:

- 1.) AFTER MINIMUM 90 DAY SETTLEMENT OF TRENCHES HAS PASSED, ALL CASTINGS WILL BE LOWERED OR REMOVED AND PLATED PRIOR TO RECLAIMING THE ROADWAY. (2017 CONSTRUCTION SEASON)
- 2.) ALL CASTINGS WILL BE RAISED TO BINDER GRADE AFTER PLACEMENT OF THE 2-1/2" BINDER PAVING COURSE. (2017 CONSTRUCTION SEASON)
- 3.) ALL CASTINGS WILL BE RAISED TO FINISH GRADE PRIOR TO PLACEMENT OF THE 1-1/2" FINAL PAVING COURSE. (2017 CONSTRUCTION SEASON)

CONSTRUCTION SEQUENCE

- 1.) FALL OF 2016 INSTALL A DRAINAGE SYSTEM WITHIN ALL AREAS AS SPECIFIED.
- 2.) SPRING OF 2017 RECLAIM AND INSTALL 2-1/2" BINDER COURSE, SIDEWALKS AND GRANITE CURB ON BAY AVENUE EAST AS SPECIFIED.
- 3.) SUMMER OF 2017 INSTALL 1-1/2" FINAL PAVING ON BAY AVENUE EAST AS SPECIFIED.

MISCELLANEOUS NOTES

- 1.) THE CONTRACTOR SHALL CUT JOINTS IN THE EXISTING PAVEMENT AREAS WHERE THE PROPOSED PAVEMENT SHALL MEET TO ALLOW A SMOOTH TRANSITION AFTER PAVING. ALL JOINTS SHALL BE SANDED AND SEALED. PAYMENT UNDER ASSOCIATED PAVING ITEM.
- 2.) THE CONTRACTOR WILL INSTALL ALL TEMPORARY SEDIMENTATION BARRIERS AS REQUIRED DURING CONSTRUCTION. INCLUDE FOR PAYMENT UNDER ITEM 7B.
- 3.) PAYMENT FOR RECONSTRUCTING EXISTING MANHOLES AND CATCH BASINS AS SPECIFIED AND SHOWN ON THE PLANS TO BE INCLUDED FOR PAYMENT UNDER ALL PIPE ITEMS.
- 4.) PAYMENT FOR REMOVING AND DISPOSING OF EXISTING MANHOLES, CATCH BASINS AND PIPE AS SPECIFIED AND SHOWN ON THE PLANS TO BE INCLUDED FOR PAYMENT UNDER ITEMS 2D.
- 5.) THE CONTRACTOR SHALL EXCAVATE TEST PITS AS REQUIRED BY THE ENGINEER TO DETERMINE ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL PLAN AND PERFORM TEST PIT EXCAVATION WELL IN ADVANCE OF COMMENCING CONSTRUCTION IN THE GENERAL AREA TO ALLOW TIME TO REVIEW ACTUAL CONDITIONS ENCOUNTERED. TEST PITS NOT SPECIFICALLY IDENTIFIED SHALL BE EXCAVATED BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER.

MISCELLANEOUS NOTES

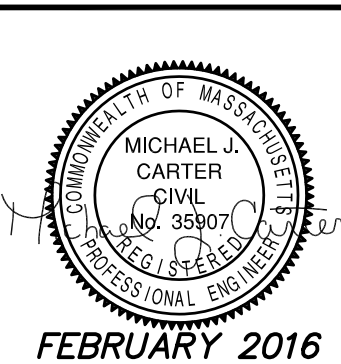
- 1.) EXISTING DRAIN FRAMES AND COVERS REMOVED FROM THE WORK SHALL BE DELIVERED TO THE HULL DPW GARAGE BY THE CONTRACTOR.
- 2.) WATER USED FOR JETTING OR PUDDLING OF TRENCHES SHALL BE BY THE WATER SYSTEM OWNER. THE CONTRACTOR SHALL INCLUDE THE COST FOR THE WATER UNDER THE APPROPRIATE PIPE ITEM.

FINE GRADING AND COMPACTING

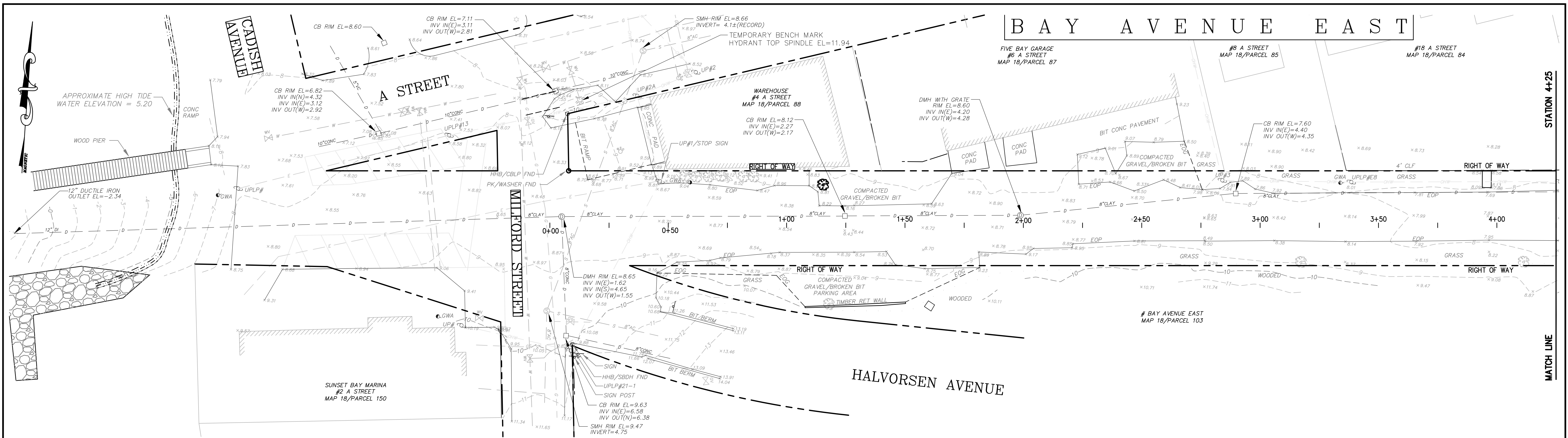
- 1.) THE CONTRACTOR SHALL FINE GRADE AND COMPACT ALL AREAS IN PREPARATION FOR PAVEMENT, INCLUDING, BUT NOT LIMITED TO THE ROADWAY AREAS AND TRANSITION DRIVEWAY AREAS. THE CONTRACTOR SHALL ALSO STRAIGHT CUT ALL EXISTING JOINTS AND EDGES IN PREPARATION FOR FINAL PAVEMENT. PAYMENT UNDER ITEM 4B.
- 2.) PAYMENT FOR GRADING AND COMPACTING THE PROPOSED BITUMINOUS SIDEWALK, RAMPS, AND DRIVEWAY APRONS SHALL BE INCLUDED UNDER THE ASSOCIATED ITEM.

GENERAL NOTES

- 1.) PLANS AND TOPOGRAPHIC INFORMATION ARE PREPARED FROM GROUND SURVEY BY GCG ASSOCIATES, INC.
- 2.) COORDINATES REFER TO MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (NAD 83). ELEVATIONS REFER TO NAVD 1988.
- 3.) ALL LOCATIONS OF SUBSURFACE UTILITIES AND STRUCTURES WERE OBTAINED FROM AVAILABLE TOWN AND UTILITY RECORDS. THE SIZE, TYPE AND LOCATION OF UTILITIES SHOWN ARE APPROXI- MATE. THE CONTRACTOR SHALL PROPERLY LOCATE THE UTILITIES PRIOR TO THE BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN UTILITY INFORMATION BY CONTACTING DIGSAFE (888-344-7233). THE CONTRACTOR SHALL EXCAVATE TEST PITS TO VERIFY UTILITY LINES. PAYMENT INCLUDED UNDER ITEM 4A.
- 4.) WATER MAINS ARE ASSUMED TO BE 5 FEET BELOW THE EXISTING GROUND SURFACE. GAS LINES ARE ASSUMED TO BE 3 FEET BELOW THE EXISTING GROUND SURFACE. TELEPHONE AND ELECTRIC CONDUIT ARE ASSUMED TO BE 2 FEET BELOW THE EXISTING GROUND SURFACE.
- 5.) LOCATION OF PROPOSED DRAINAGE SYSTEM MAY BE ALTERED IN THE FIELD BY THE ENGINEER TO SUIT FIELD CONDITIONS.
- 6.) THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A CONSTRUCTION SCHEDULE DELINEATING THE SEQUENCE OF WORK, TRAFFIC MANAGEMENT PLAN AND ESTIMATED TIME OF COMPLETION OF EACH SEGMENT OF WORK, PRIOR TO THE COMMENCEMENT OF WORK.
- 7.) THE CONTRACTOR SHALL MAINTAIN CONTINUOUS TRAFFIC FLOW DURING CONSTRUCTION SATISFACTORY TO THE ENGINEER AND THE TOWN OF HULL. NO EQUIPMENT SHALL BE ALLOWED TO BE PARKED ON THE ROAD WHEN NOT IN USE. MATERIALS SHALL NOT BE STOCKPILED ON THE ROAD.
- 8.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE RESTORATION AND CLEAN UP UPON COMPLETION OF THE PROJECT. PAYMENT ITEM 7B
- 9.) PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL DIG TEST PITS ALONG THE EXISTING UTILITIES AS DIRECTED BY THE ENGINEER TO DETERMINE ITS EXACT LOCATION. INCLUDE PAYMENT UNDER ITEM 4A.
- 10.) THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES AND PROCEDURES, AND FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH ALL WORK INCLUDED UNDER THIS CONTRACT. THE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL SAFETY BARRIERS, WARNING FLASHERS AND THE LIKE, AS REQUIRED BY THE CONDUCT OF THE WORK FOR THE PROTECTION OF WORKERS AND NON-WORKERS ALIKE. THE CONTRACTORS ATTENTION IS DIRECTED TO OSHA REQUIREMENTS.
- 11.) ALL CONSTRUCTION SIGNING SHALL CONFORM TO THE REQUIREMENTS OF THE STATE OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- 12.) PRIOR TO BEGINNING CONSTRUCTION ON BAY AVENUE EAST THE CONTRACTOR SHALL SUBMIT FOR REVIEW BY THE TOWN, A TRAFFIC MANAGEMENT PLAN PREPARED BY A MASSACHUSETTS CERTIFIED TRAFFIC ENGINEER AND IN COMPLIANCE WITH MASSDOT AND MUTCD. PLAN WILL SHOW HOW TRAFFIC FLOW WILL BE HANDLED DURING CONSTRUCTION. PAYMENT ITEM 7C
- 13.) THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITY SERVICES AS SHOWN ON THE PLAN AND BE RESPONSIBLE FOR LOCATING ANY ADDITIONAL SERVICES NOT SHOWN.
- 14.) TRENCH DEWATERING COSTS THROUGHOUT THE DURATION OF THE PROPOSED PROJECT SHALL BE INCLUDED IN THE APPLICABLE BID ITEMS.



TOWN OF HULL, MASSACHUSETTS ROADWAY IMPROVEMENT PROJECT		
BAY AVENUE EAST LEGEND AND CONSTRUCTION NOTES		
GCG ASSOCIATES, INC.		
WILMINGTON		MASSACHUSETTS
SCALE: AS SHOWN		DATE: FEBRUARY 2016
JOB NO.\FILE NAME: 1050-COVER.DWG	DESIGNED BY:M.J.C. DRAWN BY:H.M.C. CHECKED BY:H.M.C.	PLAN NO. 2 of 9



BAY AVENUE EAST
BAY AVENUE EAST – STA 4+25 – 10+50
1"=20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

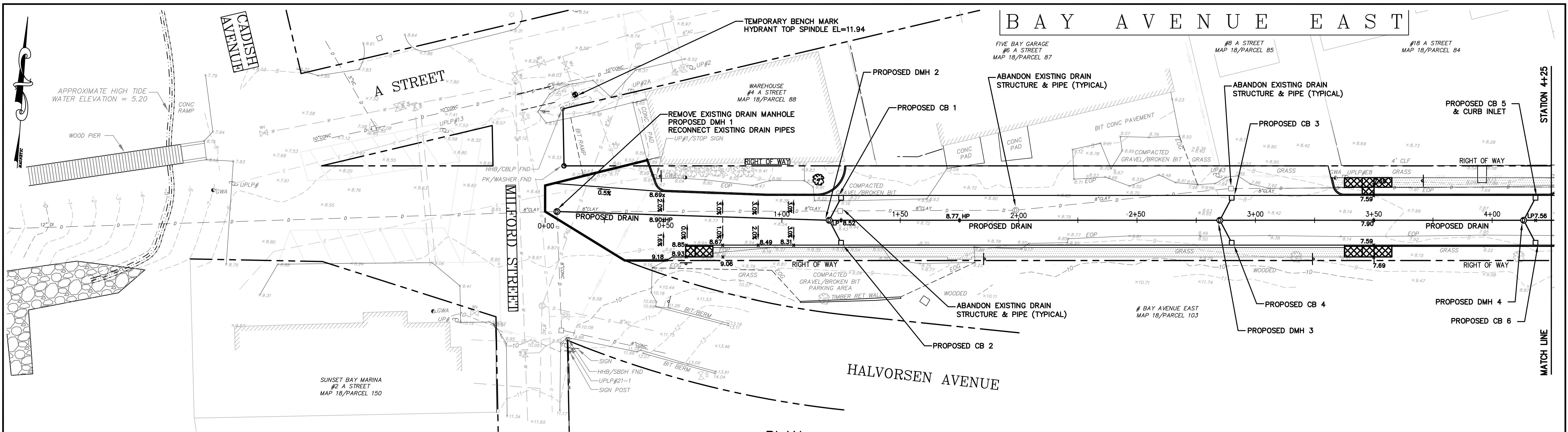
TOWN OF HULL, MASSACHUSETTS
ROADWAY IMPROVEMENT PROJECT

BAY AVENUE EAST
EXISTING CONDITIONS

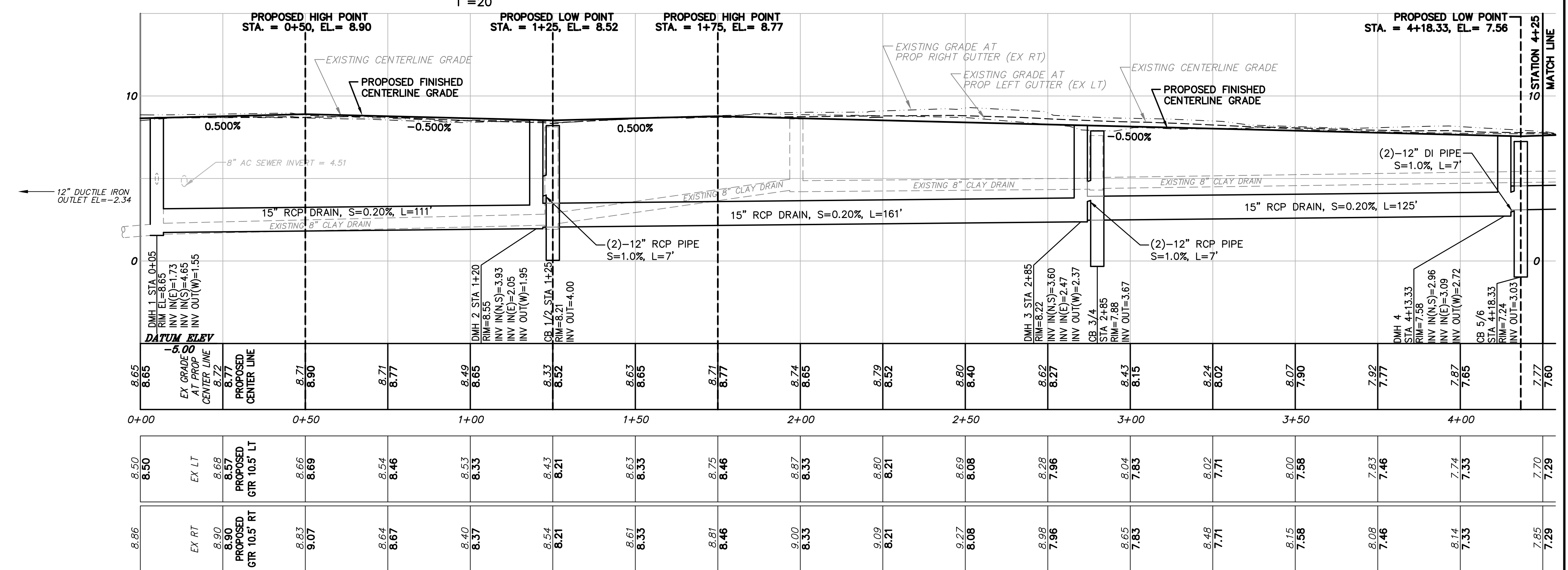
GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS

SCALE: AS NOTED	DATE: FEBRUARY 2016	
JOB NO. \FILE NAME: 1050-BAY-DESIGN	DESIGNED BY: H.M.C. DRAWN BY: H.M.C. CHECKED BY: M.J.C.	PLAN NO. 3 OF 9

FEBRUARY 2016

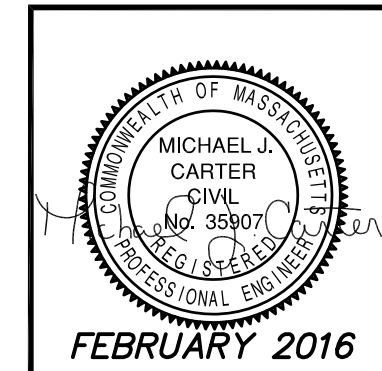
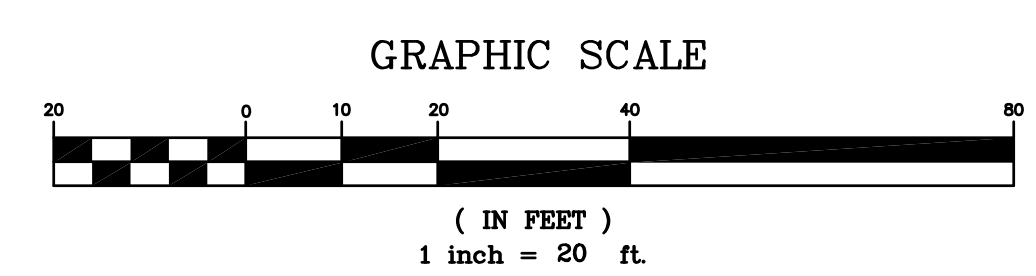


PLAN
1"=20'



PROFILE
HORIZONTAL: 1"=20'
VERTICAL: 1"=4'

- PROFILE LEGEND**
- PROPOSED CENTERLINE GRADE
 - EXISTING GRADE AT PROPOSED CENTERLINE
 - EXISTING GRADE AT PROP LEFT GUTTER (EX LT)
 - EXISTING GRADE AT PROP RIGHT GUTTER (EX RT)



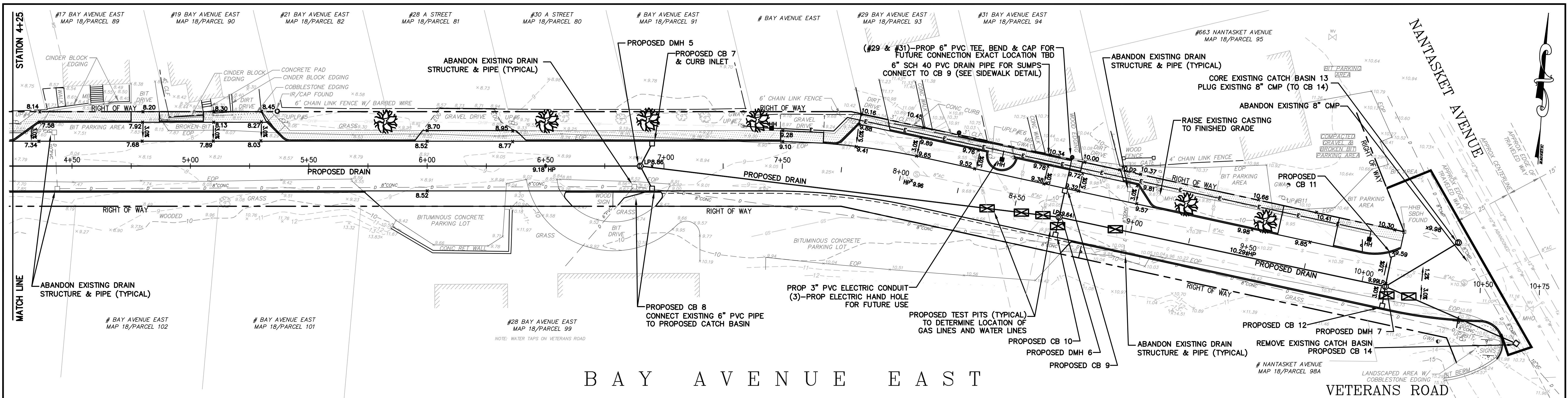
TOWN OF HULL, MASSACHUSETTS
ROADWAY IMPROVEMENT PROJECT

BAY AVENUE EAST
PLAN & PROFILE
STATION 0+00 - 4+25

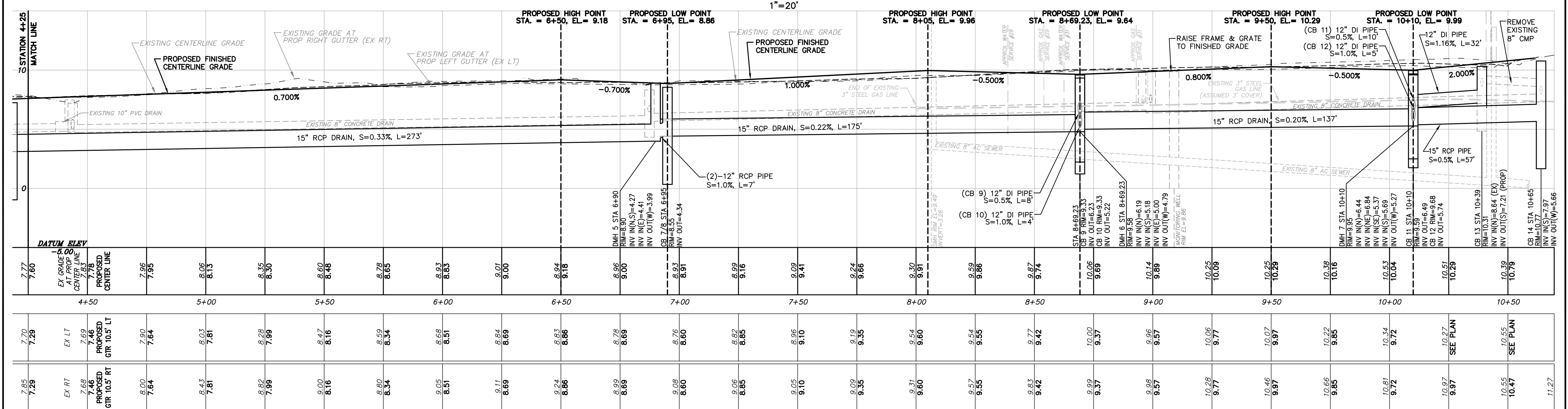
GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS

SCALE: AS NOTED DATE: FEBRUARY 2016

JOB NO. \FILE NAME: 1050-BAY-DESIGN	DESIGNED BY: H.M.C. DRAWN BY: H.M.C. CHECKED BY: M.J.C.	PLAN NO. 4 of 9
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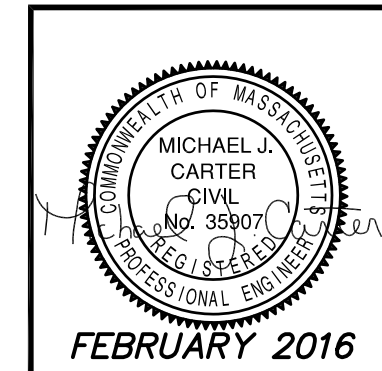
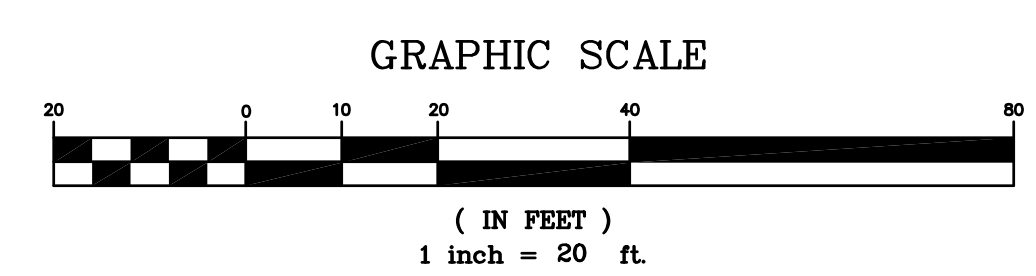
PLAN
1"=20'



PROFILE
HORIZONTAL: 1"=20'
VERTICAL: 1"=4'

PROFILE LEGEND

- PROPOSED CENTERLINE GRADE
- EXISTING GRADE AT PROPOSED CENTERLINE
- EXISTING GRADE AT PROP LEFT GUTTER (EX LT)
- EXISTING GRADE AT PROP RIGHT GUTTER (EX RT)



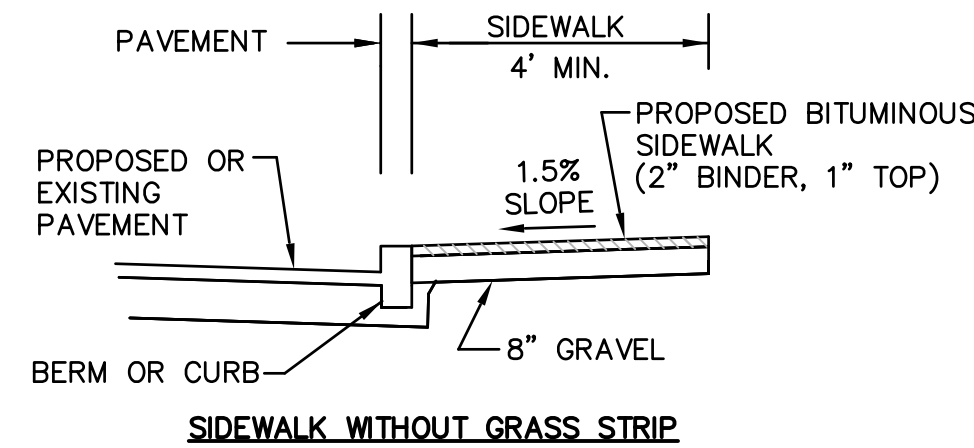
TOWN OF HULL, MASSACHUSETTS
ROADWAY IMPROVEMENT PROJECT

BAY AVENUE EAST
PLAN & PROFILE
STATION 4+25 - 10+75

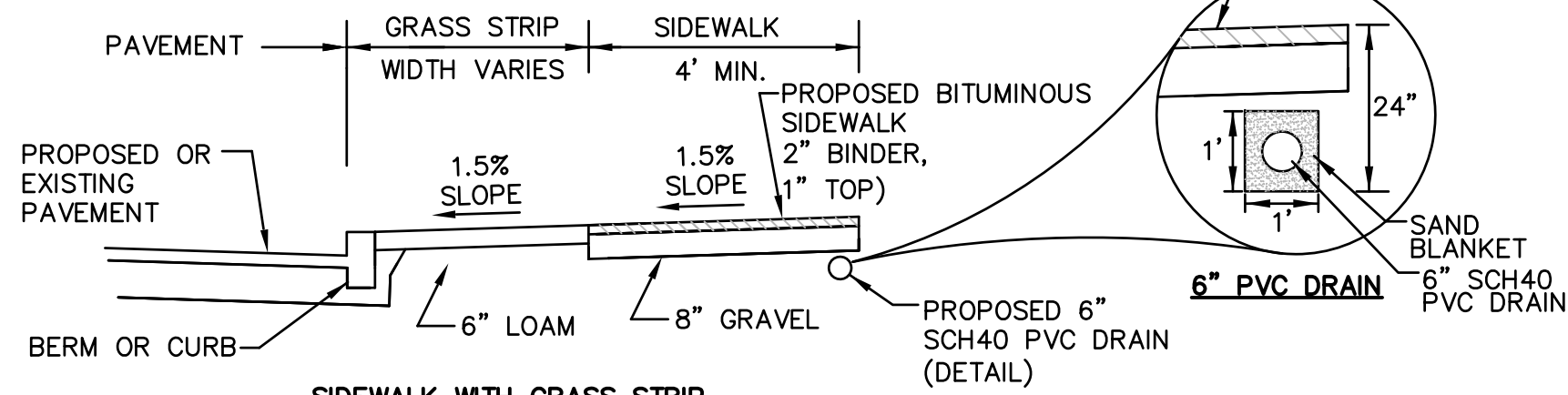
GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS

SCALE: AS NOTED DATE: FEBRUARY 2016

JOB NO. \FILE NAME: 1050-BAY-DESIGN DESIGNED BY: H.M.C. DRAWN BY: H.M.C. CHECKED BY: M.J.C. PLAN NO. 5 of 9

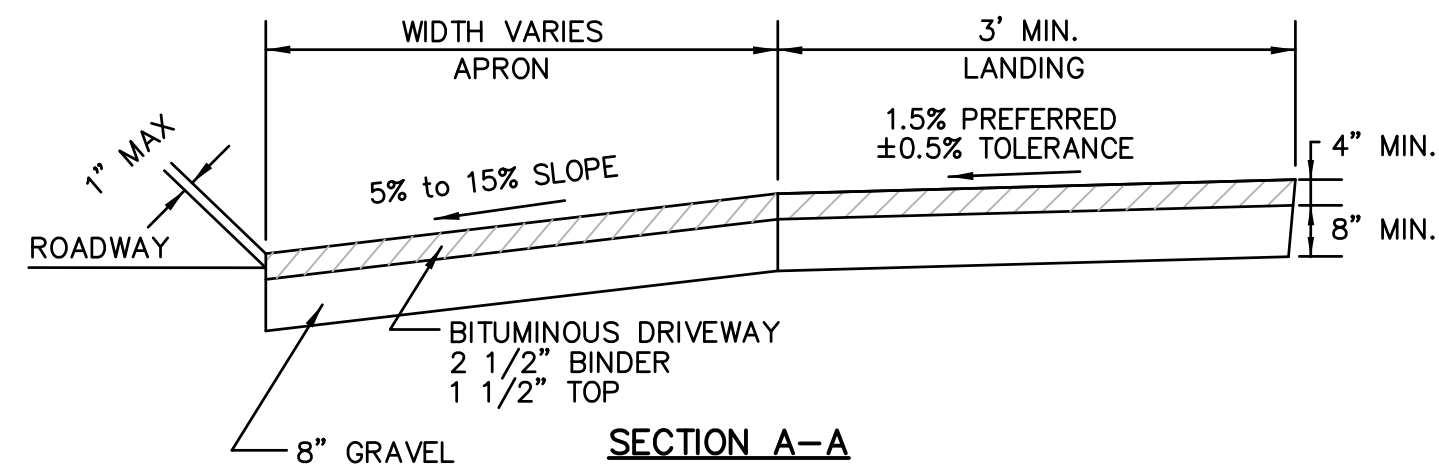


SIDEWALK WITHOUT GRASS STRIP

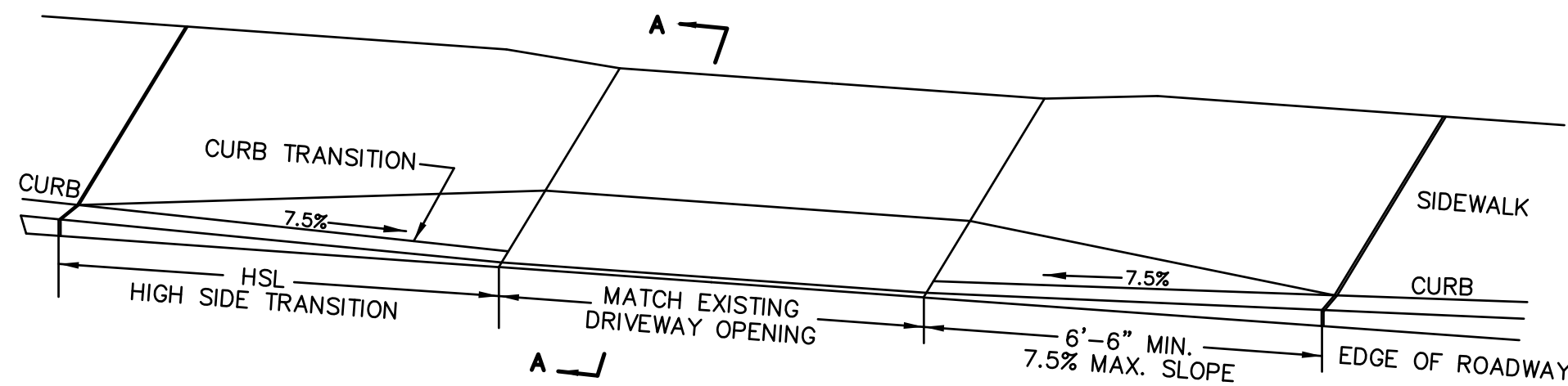


SIDEWALK WITH GRASS STRIP

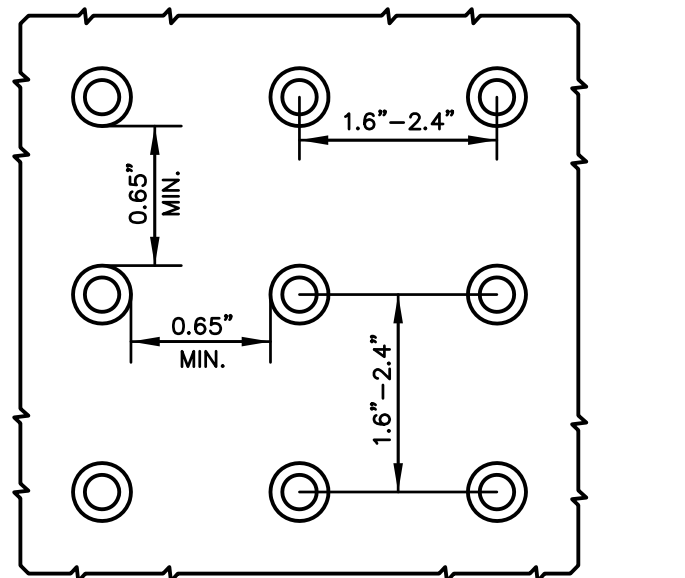
TYPICAL SIDEWALK CROSS SECTION
N.T.S.



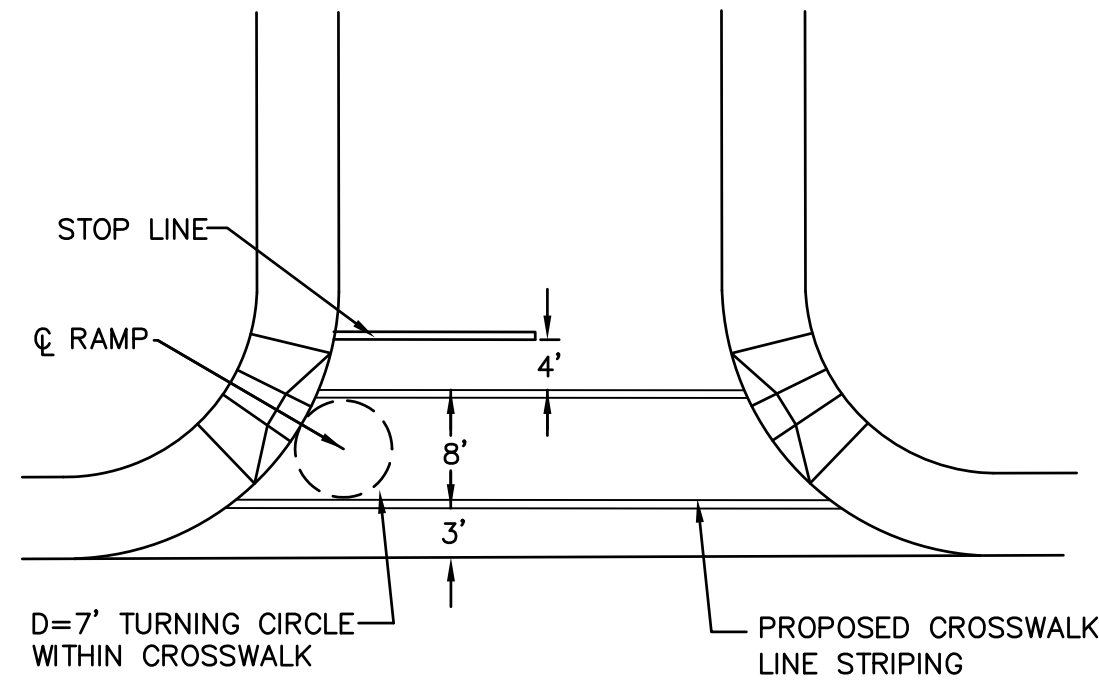
SECTION A-A



TYPICAL DRIVEWAY
N.T.S.

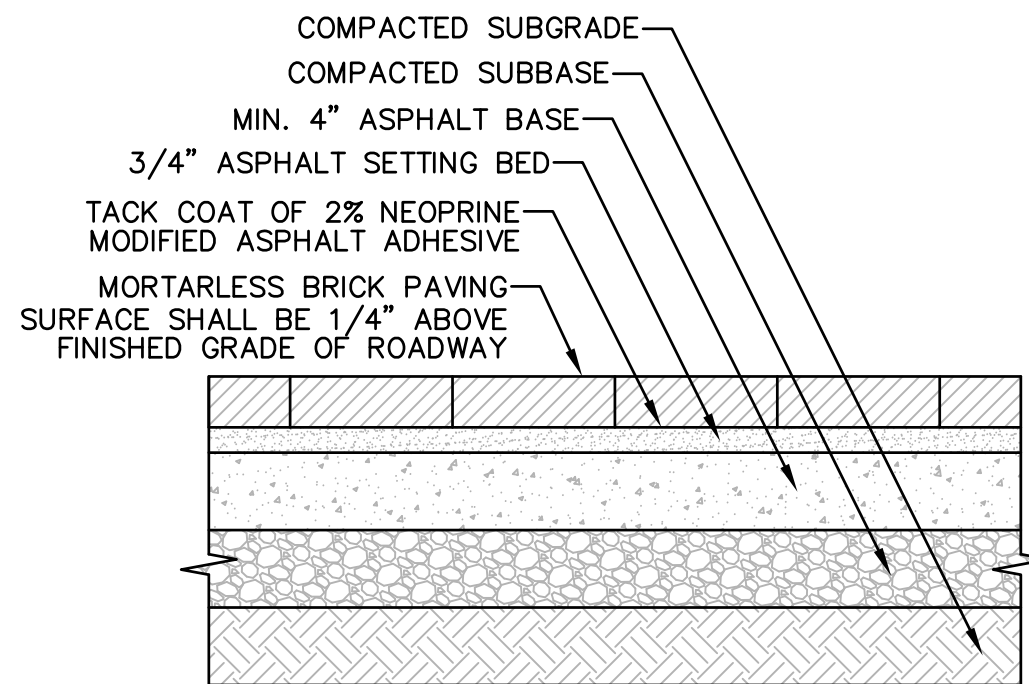


DETECTABLE WARNING PANEL
DOME LAYOUT
N.T.S.



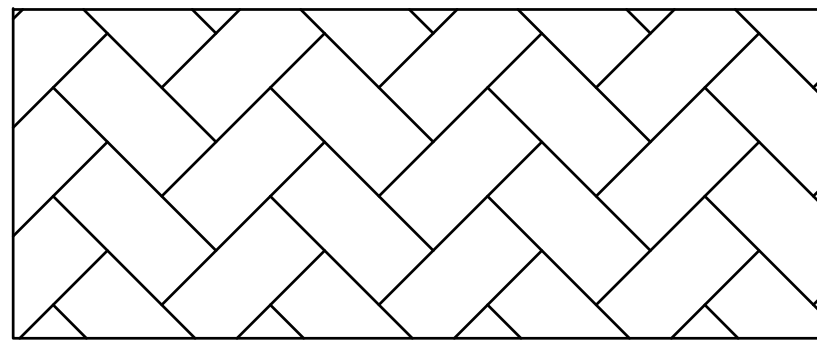
- NOTES:
1. THE CROSSWALKS AND STOP LINES SHALL BE PAINTED WITH 12" WIDE, WHITE REFLECTORIZED, EPOXY PAINT IN THE PATTERN SHOWN.
 2. SEE DECORATIVE CROSSWALK DETAILS FOR ALTERNATE.

PAIRED WHEELCHAIR RAMP &
CROSSWALK DETAIL
N.T.S.

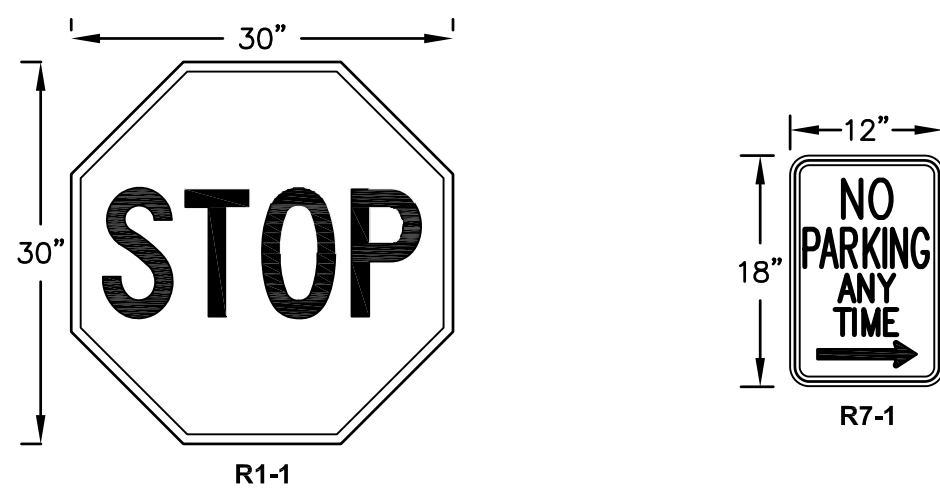


DECORATIVE CROSSWALK PAVING DETAIL

NOT TO SCALE
NOTE: SEE SPECIFICATIONS



DECORATIVE CROSSWALK BRICK PAVING PATTERN
HERRINGBONE
NOT TO SCALE

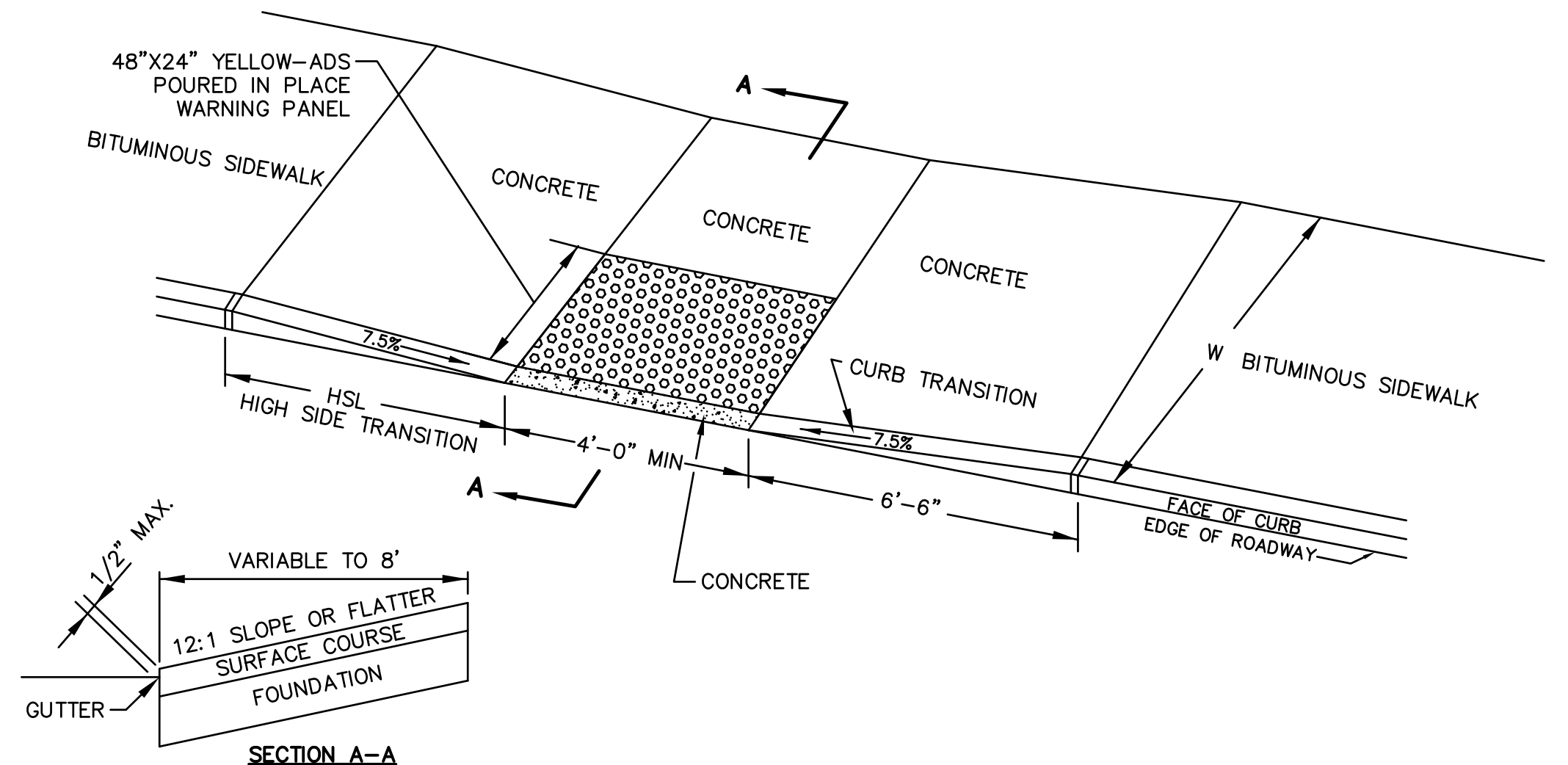


SCHEDULE SIGN COLORS

NO.	MUTCD SIGN	DESCRIPTION	LEGEND COLOR	BACKGROUND / BORDER / SYMBOL COLOR
2	R1-1	"STOP"	WHITE	RED/WHITE BORDER
2	R1-6	"STATE LAW YIELD TO PEDESTRIANS WITHIN CROSSWALK"	BLACK	GREEN OR YELLOW (FLUORESCENT) "YIELD"-RED ON WHITE PED. SYM. BLACK ON WHITE
4	R7-1	"NO PARKING ANY TIME"	RED	WHITE/RED BORDER
1	W3-1	STOP AHEAD (SYMBOL)	N/A	YELLOW BLACK BORDER & ARROW RED SYMBOL/WHITE BORDER
2	-	"BAY AVENUE EAST" STREET SIGNS	WHITE	BLUE

- NOTES:
1. ALL COLORS ARE RETROREFLECTIVE EXCEPT BLACK.
 2. ALL SIGNS SHALL COMPLY WITH MUTCD 2003 AND MHD REGULATIONS.
 3. ALL SIGNS TO BE ALUMINUM WITH REFLECTIVE BACKING.

STANDARD SIGN DETAILS
N.T.S.



- NOTES:
1. THE DIMENSIONS SHOWN AT ROADWAY EDGE ARE FIXED DISTANCES.
 2. RAMP CROSS SECTION TO BE SAME AS ADJACENT SIDEWALK; e.g. DEPTH OF SURFACES.
 3. PORTLAND CEMENT CONCRETE RAMPS ARE TO BE TEXTURED BY BROOMING IN A DIRECTION PARALLEL TO THE LENGTH OF THE RAMP.
 4. IN NO CASE ARE THE RAMPS TO BE PLACED BEHIND THE STOP LINE.
 5. SIDEWALKS THAT CROSS DRIVEWAYS SHALL BE RAMPED TO MEET THE GRADE OF THE DRIVEWAY.
 - * THESE DIMENSIONS ARE SUBJECT TO CHANGE IN THE FIELD IF EXISTING APPURTENANCES OR CONDITIONS WILL MAKE THE RAMP LOCATIONS IMPRACTICAL OR UNSAFE.

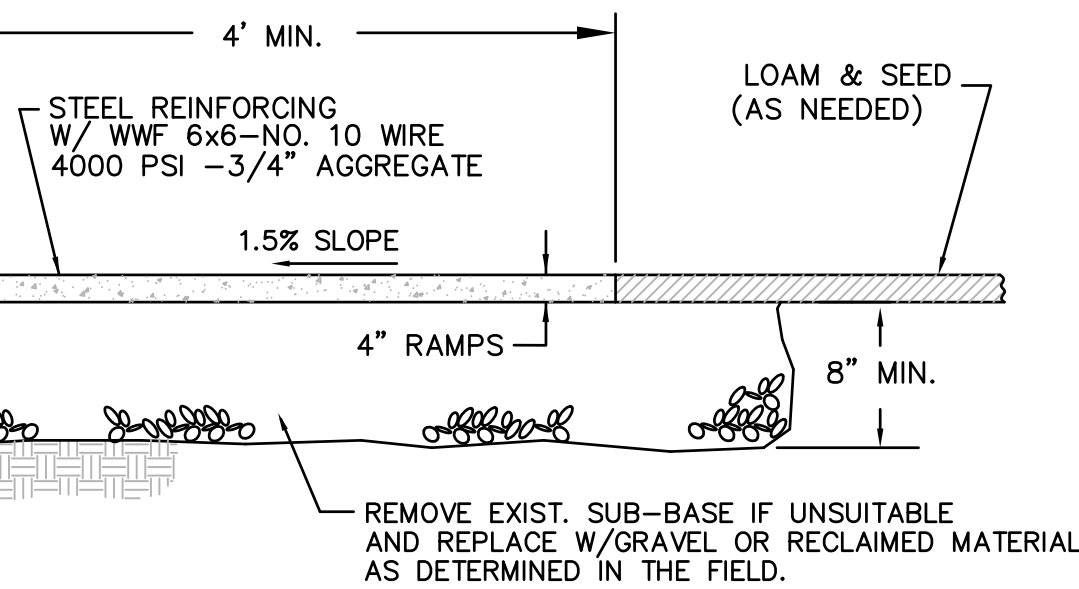
ROAD PROFILE GRADE	*HIGH SIDE TRANSITION LENGTH
0	6'-6"
>0 - 1	7'-8"
>1 - 2	9'-0"
>2 - 3	11'-0"
>3 - 4	14'-0"
>4	15'-0" MAX.

* BASED ON DESIGN SLOPE OF 7.5% AND CURB REVEAL OF 6".

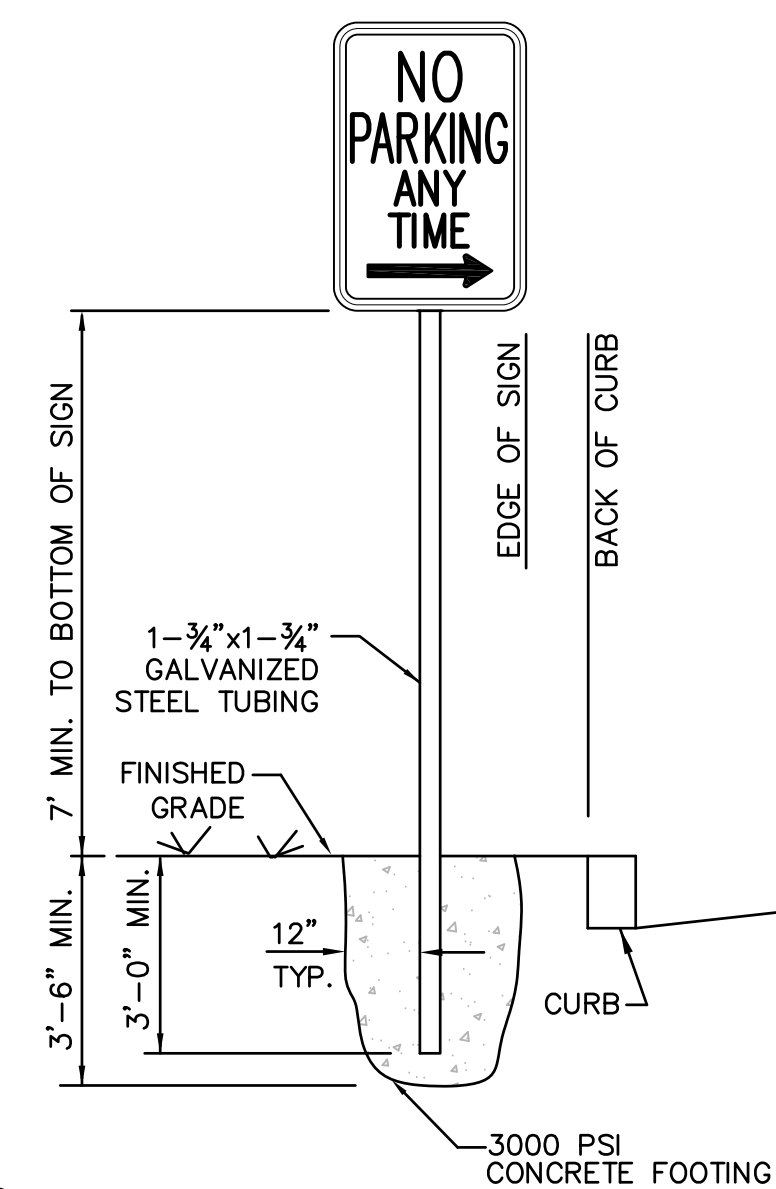
WHEELCHAIR RAMPS
N.T.S.

WHEELCHAIR RAMP NOTES

1. ROADWAY SIDEWALK CROSS SLOPES, FOR BRICK, CEMENT CONCRETE, AND BITUMINOUS CONCRETE, AS INDICATED IN THE STANDARD SPECIFICATIONS, WILL BE 1.5%. A CONSTRUCTION TOLERANCE OF $\pm 0.5\%$ IS ACCEPTABLE ON ROADWAY SIDEWALKS. SIDEWALKS ON BRIDGES WILL BE CONSTRUCTED TO A CROSS SLOPE OF 1.0% IN ACCORD WITH BRIDGE POLICY. (REFER TO STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, SECTION 700.) IN ACCORDANCE WITH 521 CMR THE RULES AND REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD (AAB), THE SIDEWALK CROSS SLOPE CANNOT EXCEED 2.0%.
2. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'-3" (1.00 m) SHALL BE MAINTAINED PAST ALL OBSTRUCTIONS (UTILITY POLES, SIGNS, SIGNAL FOUNDATIONS AND MASTS, MAILBOXES, ALONG DRIVE OPENINGS, ETC.).
3. THE WHEELCHAIR RAMP SLOPES AND SIDE SLOPES (TRANSITIONS) WILL BE 7.5% WITH A CONSTRUCTION TOLERANCE OF $\pm 0.5\%$. HOWEVER, THESE SLOPES MAY BE FLATTER WHEN WARRANTED BY SURROUNDING CONDITIONS.
4. WHERE THE ROAD PROFILE EXCEEDS 4%, THE HIGH SIDE TRANSITION LENGTH UNDER ANY CONDITIONS NEED NOT EXCEED 4.57m (15').
5. IN NO CASE WHERE A STOP LINE IS WARRANTED, SHALL A RAMP BE PLACED ON THE TRAFFIC APPROACH SIDE OF THAT STOP LINE.
6. FIXED OBJECTS (I.E. UTILITY POLES, HYDRANTS, SIGNS, SIGNAL FOUNDATIONS, ETC.) MUST NOT ENCROACH ON ANY PART OF THE WHEELCHAIR RAMP INCLUDING TRANSITION SLOPES.
7. AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP, EXCLUDING CURB TRANSITIONS, TO BE LOCATED OUTSIDE THE CROSSWALK. THE WHEELCHAIR RAMP ENTRANCE IS TO BE CENTERED IN THE CROSSWALK WHENEVER POSSIBLE.
8. CATCH BASINS WHICH ARE IN THE VICINITY OF A WHEELCHAIR RAMP SHALL BE LOCATED UPGRADE OF THE RAMP ENTRANCE.
9. THE ENTRANCE OF A WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.
10. TESTING SURFACE: WHEN TESTING WITH A STRAIGHTEDGE PLACED PARALLEL TO THE LINE OF THE SLOPE THERE SHALL BE NO DEVIATION FROM A TRUE SURFACE IN EXCESS OF 1/4" (6 mm).
11. SIDEWALK CONSTRUCTION SHALL BE IN CONFORMANCE WITH MASS HIGHWAY CONSTRUCTION STANDARD FOR HANDICAPPED RAMPS. SEE CONTRACT DOCUMENTS AND SPECIFICATIONS FOR COPIES OF WHEELCHAIR RAMP DETAILS REQUIRED ON THE PROJECT.
12. EACH WHEELCHAIR RAMP SHALL HAVE A POURED INPLACE, ADS DETECTABLE WARNING PANEL. PANELS SHALL BE ALIGNED TO THE BACK OF THE PROPOSED CURB RADIUS AS REQUIRED.

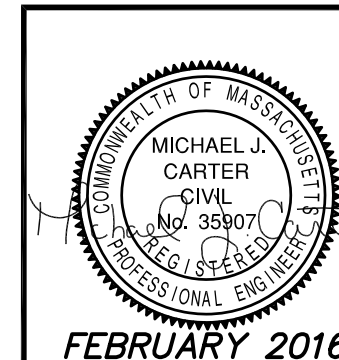


RAMP DETAIL
N.T.S.

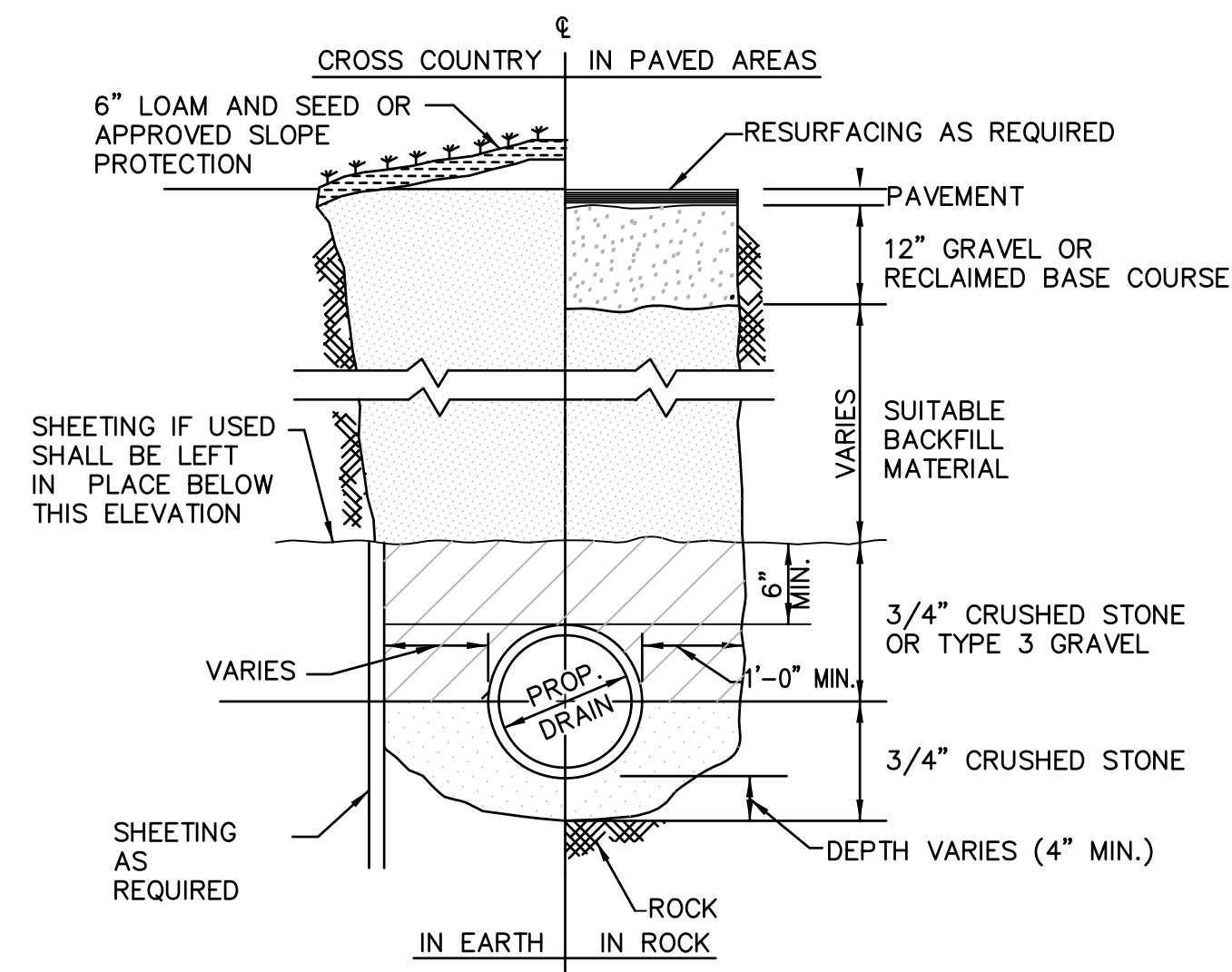


- NOTES:
1. ALL SIGN POSTS SHALL BE GALVANIZED STEEL, BREAKAWAY STYLE, 1-3/4"x1-3/4" TUBING.
 2. POST SHALL COMPLY WITH MHD STANDARDS.
 3. EDGE OF SIGN SHALL NOT OVERHANG BACK OF CURB.

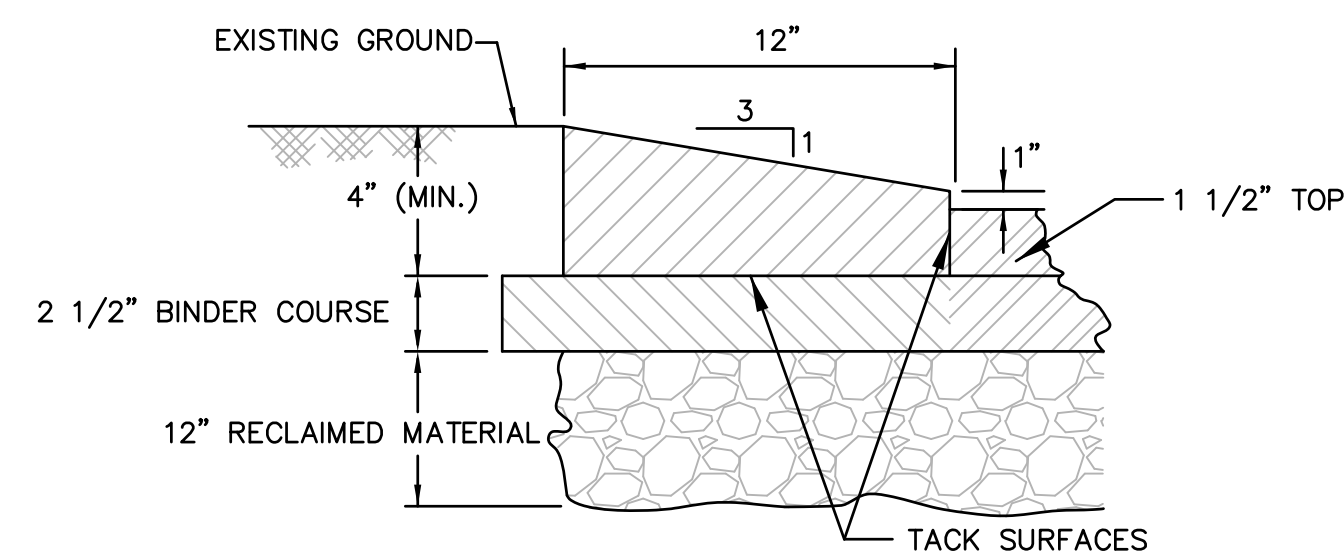
TYPICAL SIGN INSTALLATION DETAIL
N.T.S.



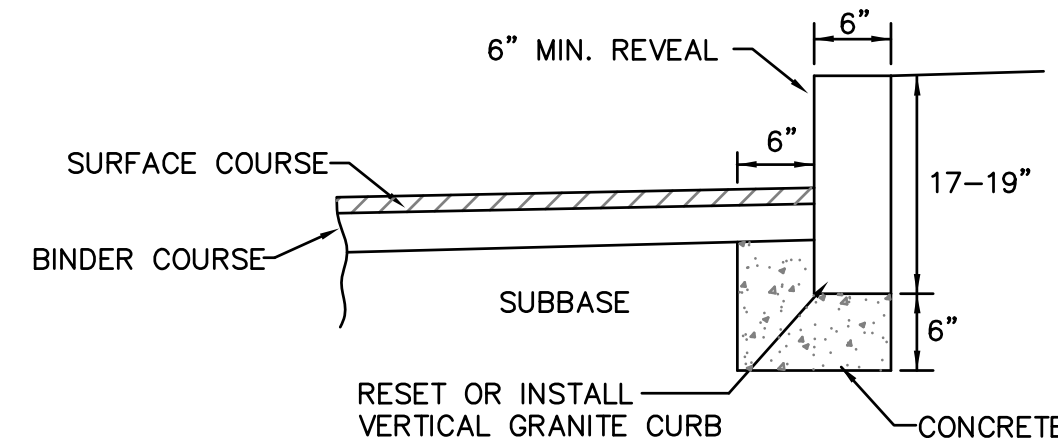
TOWN OF HULL, MASSACHUSETTS ROADWAY IMPROVEMENT PROJECT		
BAY AVENUE EAST MISCELLANEOUS DETAILS I		
GCG ASSOCIATES, INC.		
WILMINGTON	MASSACHUSETTS	
SCALE: AS NOTED	DATE: FEBRUARY 2016	
JOB NO. \FILE NAME: 1050-DETAILS.DWG	DESIGNED BY: H.M.C. DRAWN BY: H.M.C. CHECKED BY: M.J.C.	PLAN NO. 7 of 9



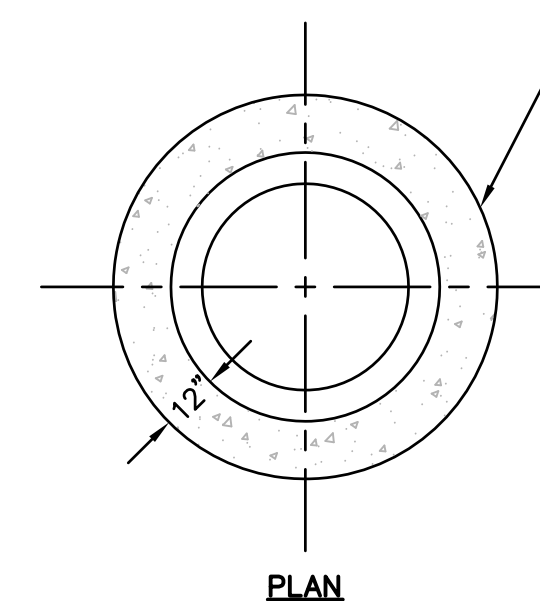
TYPICAL DRAIN TRENCH DETAIL
NOT TO SCALE



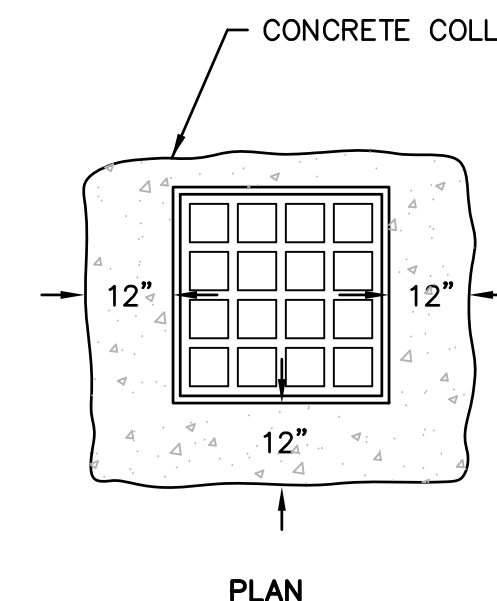
CAPE COD BITUMINOUS BERM DETAIL
N.T.S.



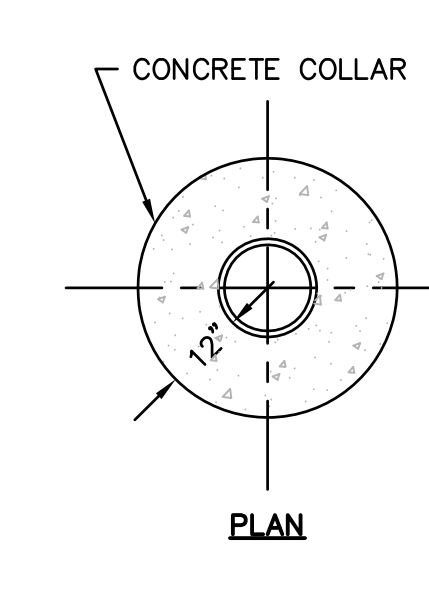
VERTICAL GRANITE CURB
N.T.S.



MANHOLES

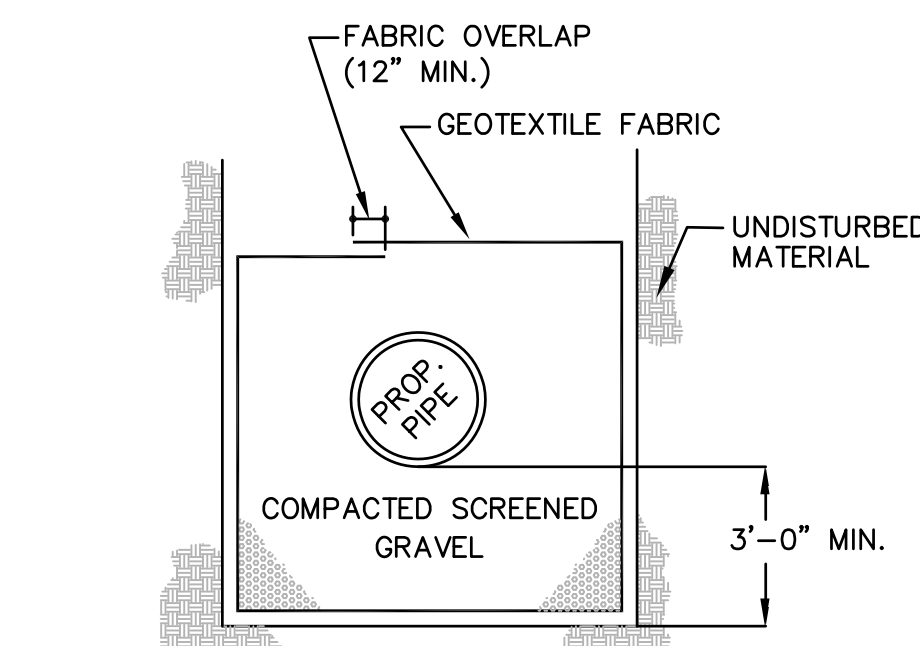


CATCH BASINS



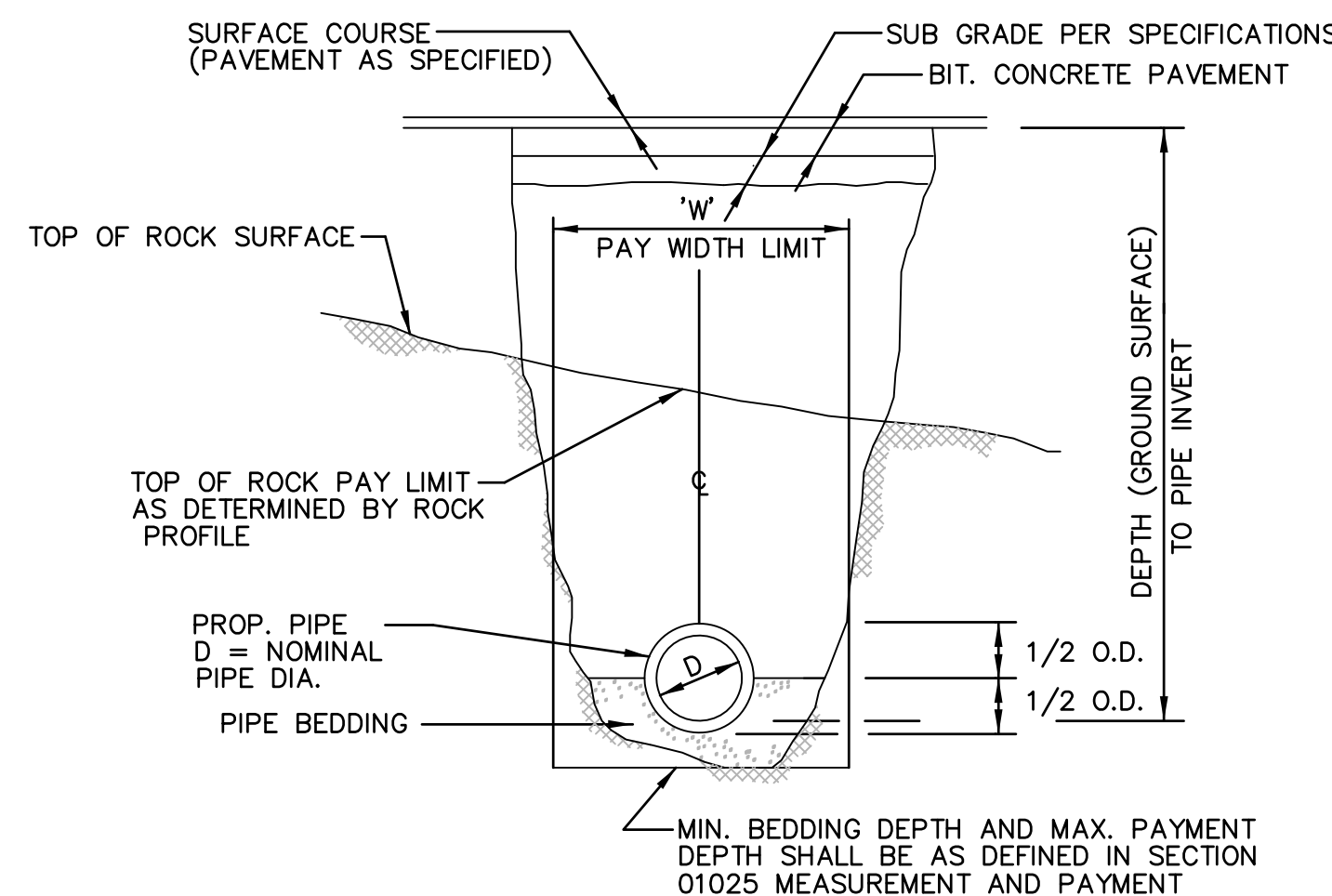
WATER & GAS SERVICE BOXES

DETAILS FOR ADJUSTING CASTINGS
N.T.S.



NOTE:
PLACEMENT OF GEOTEXTILE FABRIC SHALL EXTEND 5'
ON EITHER SIDE OF POOR SUBGRADE CONDITIONS.

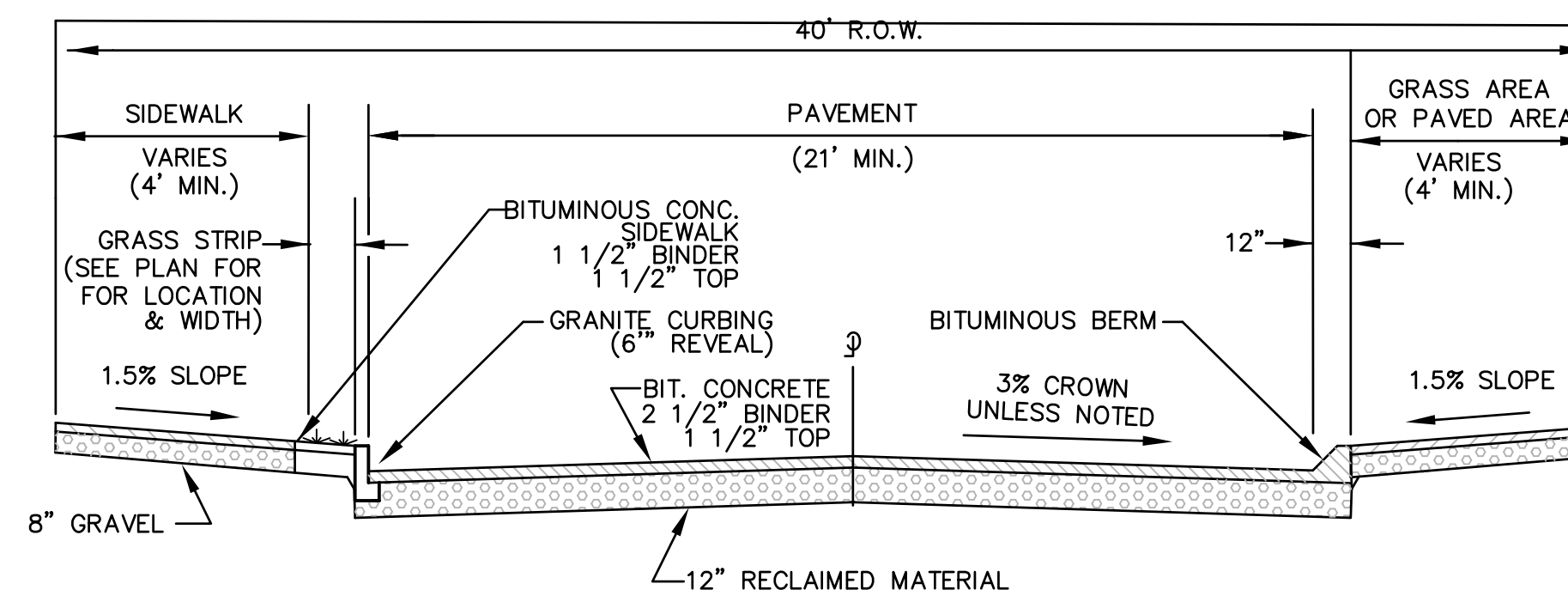
**TRENCH EXCAVATION WITH
UNSUITABLE SOIL CONDITIONS**
NOT TO SCALE



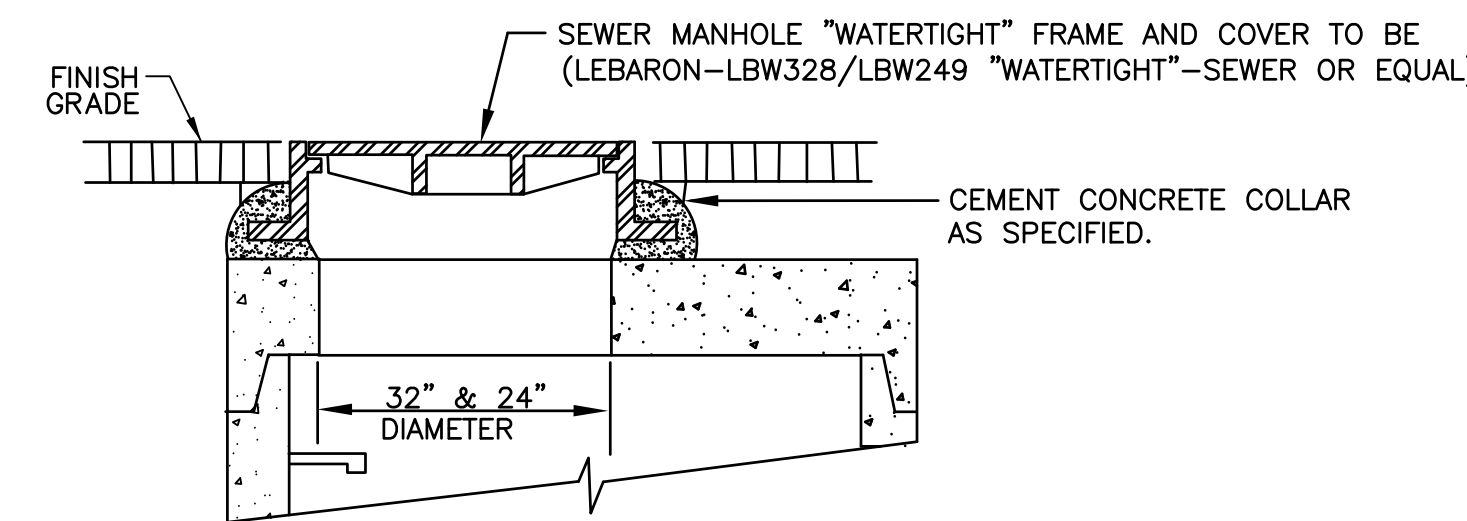
TRENCH IN ROCK PAYMENT LIMITS
NOT TO SCALE

NOTES:
1. THE PAY LIMIT FOR ROCK REMOVAL OUTSIDE
MANHOLES SHALL BE WITHIN A VERTICAL
LINE OFFSET ONE FOOT (1') OUTSIDE THE
WIDEST DIMENSION OF THE STRUCTURE OR
SHALL BE THE MAXIMUM CONNECTING TRENCH
WIDTH, WHICHEVER IS GREATER.

PAYMENT FOR ROCK EXCAVATION CHART		
DEPTH FROM GROUND SURFACE TO INVERT OF PIPE	PAY WIDTH "W" NOMINAL PIPE DIA.	
	0'-24"	OVER 24"
DEPTH < 12'	5'-0"	D+3'-0"
12' < DEPTH < 20'	7'-0"	D+5'
DEPTH > 20'	9'-0"	D+7'

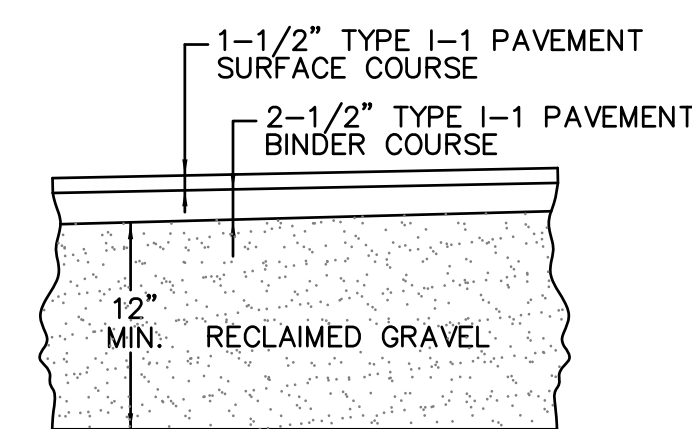


TYPICAL CROSS SECTION OF BAY AVENUE EAST
NOT TO SCALE

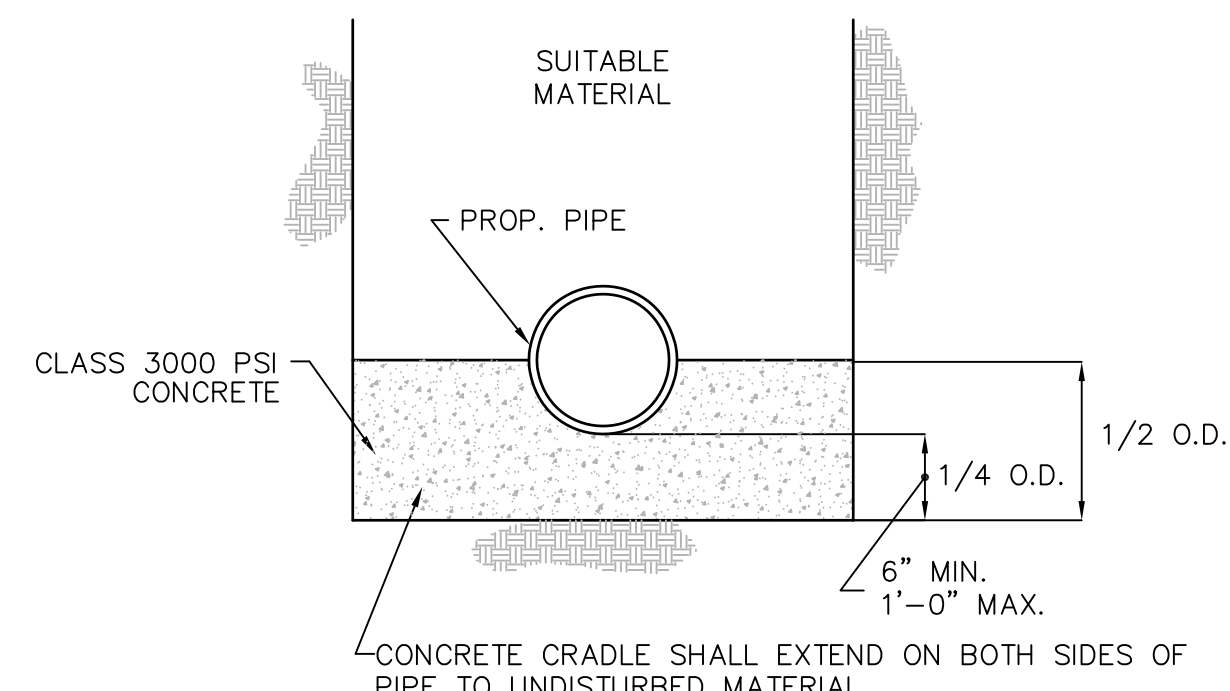


SEWER MANHOLE FRAME AND COVER REPLACEMENT
NOT TO SCALE

NOTES:
1. PRIOR TO COMPLETING FINAL GRADING OF THE RECLAIMED
BASE COURSE THE ENGINEER SHALL REVIEW GRADES ON
ROAD TO DETERMINE THAT SUFFICIENT CURB REVEAL
SHALL BE MAINTAINED. IF GRADES NEED TO BE
ADJUSTED, THE CONTRACTOR SHALL REGRADE AS
DIRECTED. THE COST TO PERFORM THIS WORK SHALL BE
INCLUDED UNDER THE RECLAMATION ITEM.

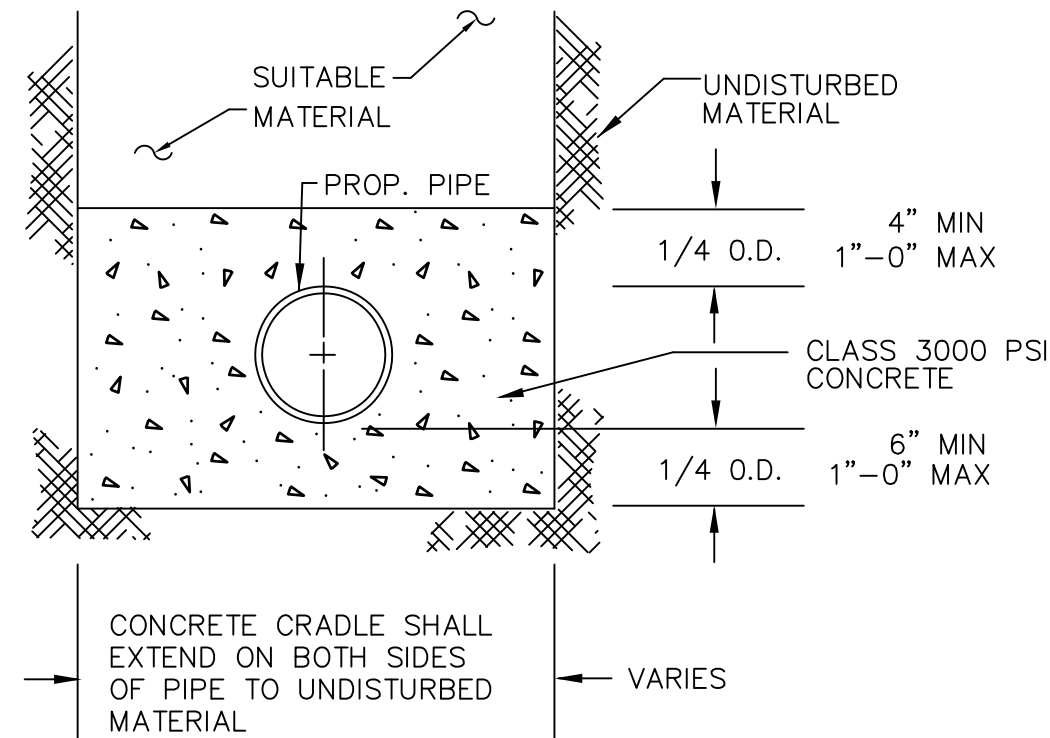


TYPICAL ROADWAY PAVEMENT SECTION
N.T.S.

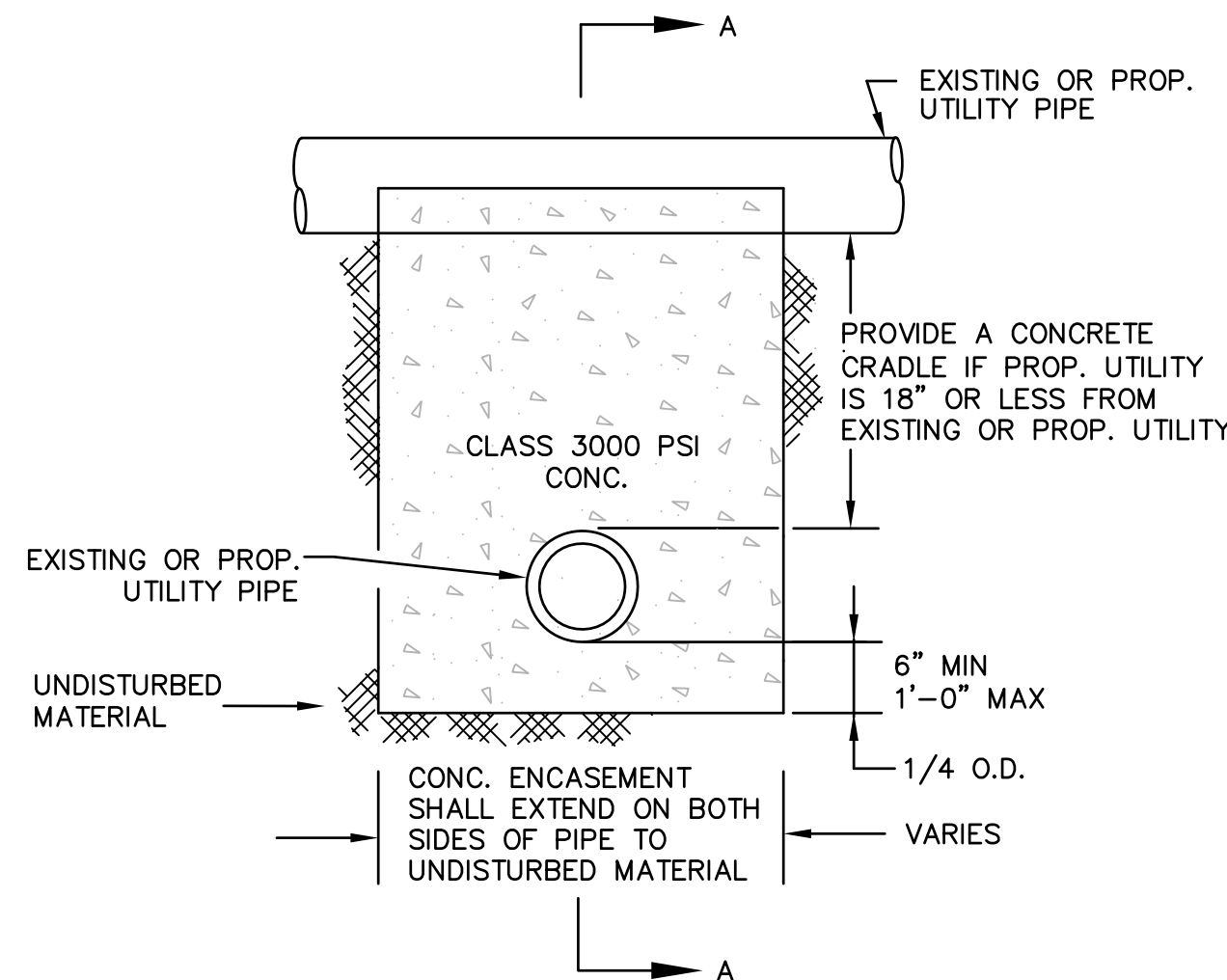


NOTES:
1. CONCRETE CRADLE OR ENCASEMENT SHALL TERMINATE
AT PIPE JOINTS.
2. PIPE SHALL BE BRACED TO PREVENT MOVEMENT WHILE
CONCRETE IS POURED.

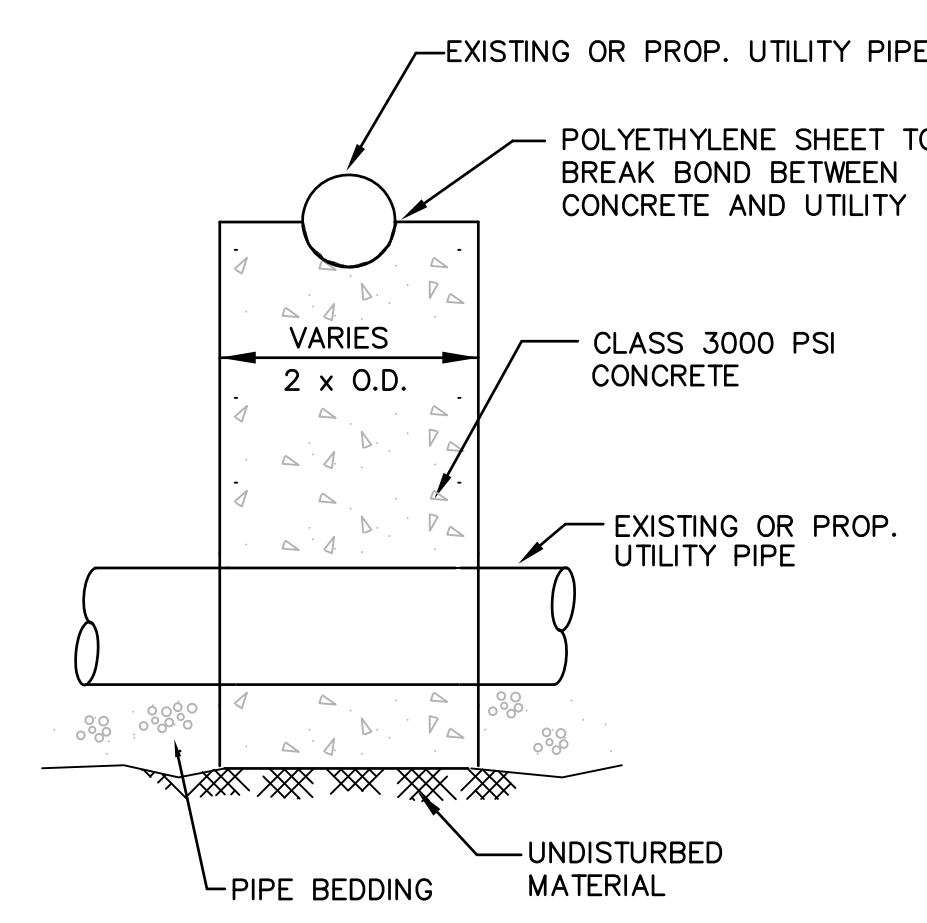
CONCRETE CRADLE
NOT TO SCALE



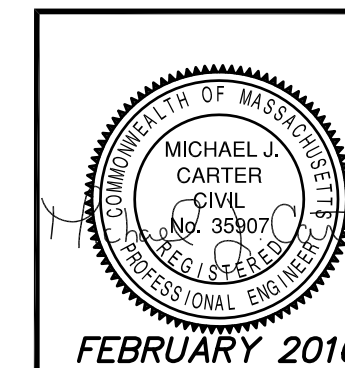
**CONCRETE DAMS &
CONCRETE ENCASEMENT**
NOT TO SCALE



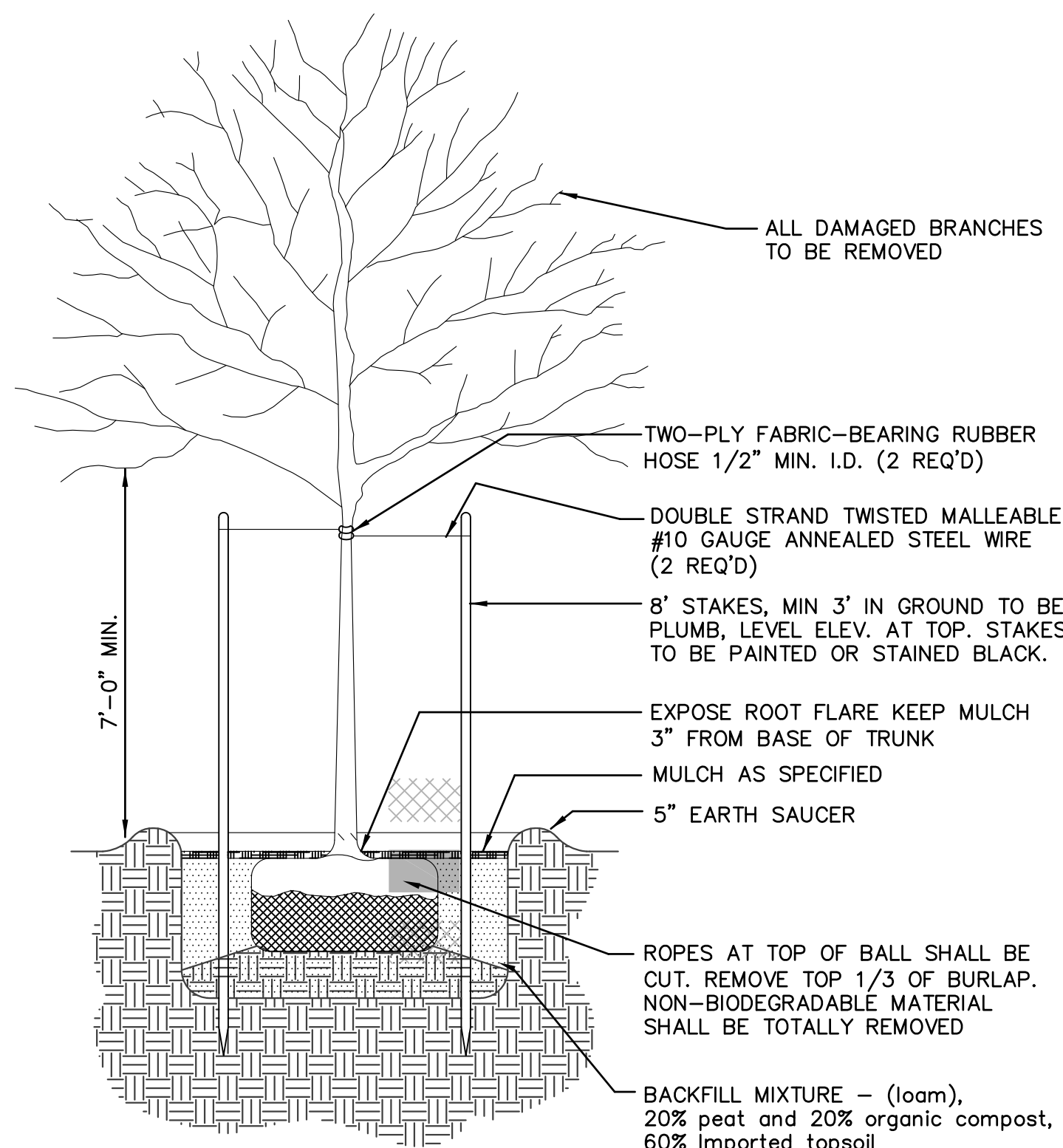
CONCRETE UTILITY SUPPORT
NOT TO SCALE



SECTION A-A



TOWN OF HULL, MASSACHUSETTS ROADWAY IMPROVEMENT PROJECT			
BAY AVENUE EAST MISCELLANEOUS DETAILS II			
GCG ASSOCIATES, INC.		WILMINGTON MASSACHUSETTS	
SCALE: AS NOTED		DATE: FEBRUARY 2016	
JOB NO. \FILE NAME:	DESIGNED BY: H.M.C.	PLAN NO.	
1050-DETAILS.DWG	DRAWN BY: H.M.C.	8 OF 9	
	CHECKED BY: M.J.C.		



NOTES:

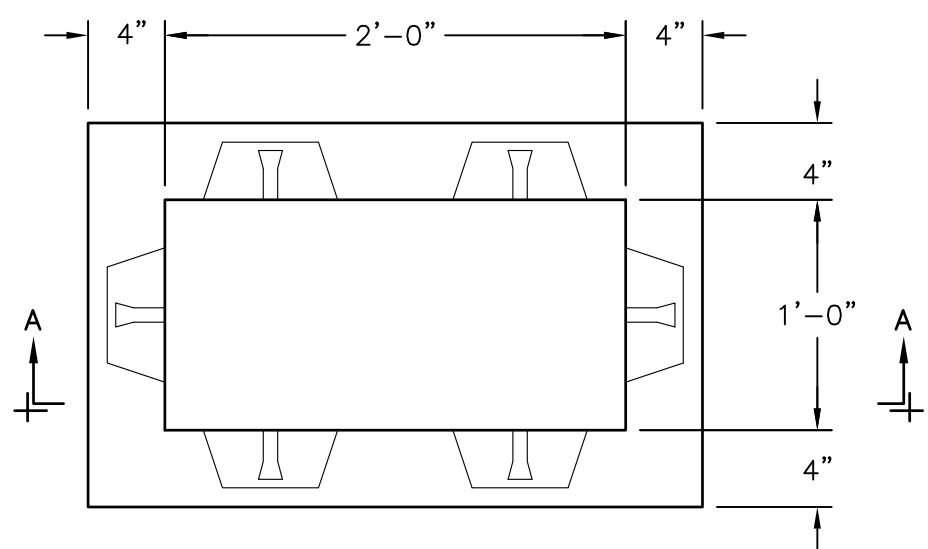
- TREE SHALL BEAR SAME RELATION TO FINISHED GRADE AS IT BORE TO PREVIOUS EXISTING GRADE.
- EXACT LOCATION OF TREES TO BE DETERMINED IN FIELD.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

PLANTING OF STREET TREES

KEY	QTY	BOTANICAL NAME	COMMON NAME	MINIMUM SIZE	ROOT
CK	6	CORNUS KOUSA	KOUSA DOGWOOD	4" cal.	B&B
ALTERNATE (IF KOUSA DOGWOOD IS NOT AVAILABLE):					
	6	CERCIS CANADENSIS "FLAME"	EASTERN RED BUD	4" cal.	B&B



PLAN

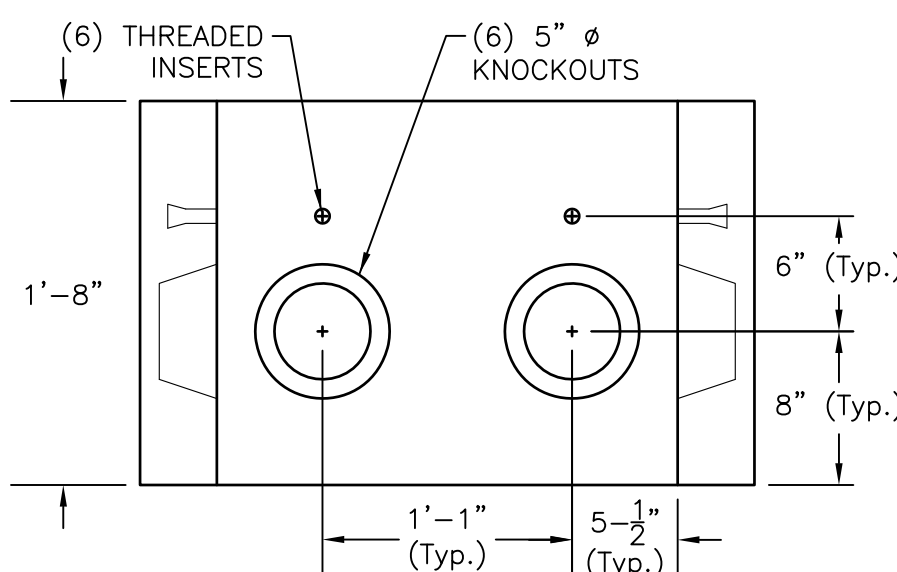
NOTES:

HANDHOLE SHALL BE ROTONDO PRECAST PRODUCT NUMBER HH 122420 (OR EQUAL) WITH LEBARON (EAST JORDON IRON WORKS) FRAME AND GRATE LVC1325-1-000 (OR EQUAL).

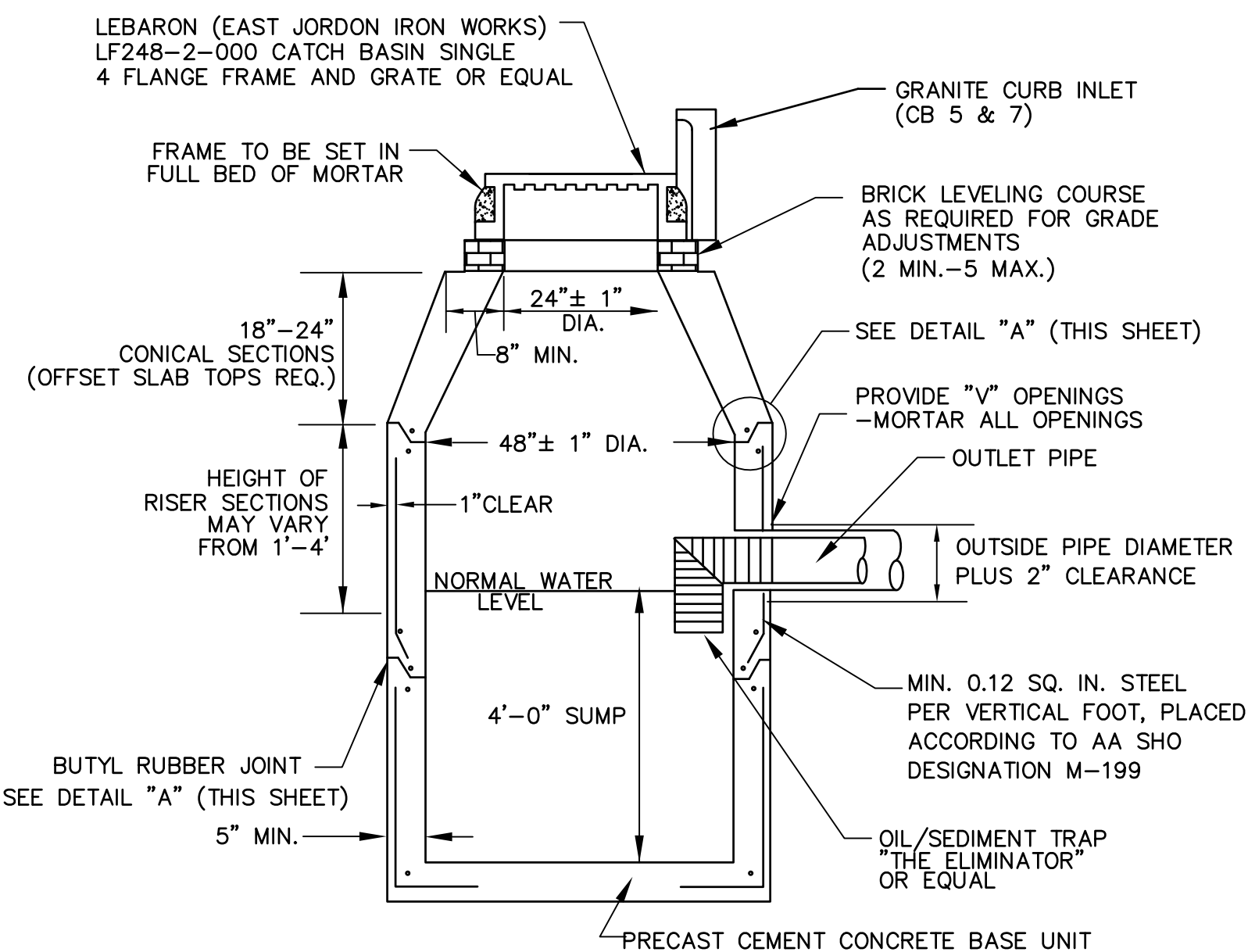
- CONCRETE: 28 DAY COMPRESSIVE STRENGTH F'C = 4,000 PSI.
- REBAR: GRADE 60 PER ASTM A615.
- DESIGN LOADING: AASHTO HS20-44.
- GENERAL CONTRACTOR TO VERIFY ALL OPENINGS, SIZES AND LOCATIONS.
- APPROXIMATE WEIGHT = 0.3 TONS
- PLACE 6" OF CRUSHED STONE ON COMPACTED SUBGRADE UNDER CONCRETE HANDHOLE. REMOVE TOP AND SUBSOIL AND REPLACE WITH GRAVEL IN A FILL CONDITION.

PRECAST CONCRETE HANDHOLE

N.T.S.



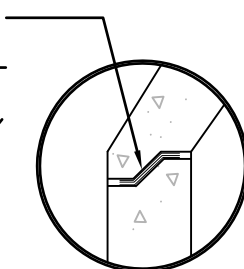
SECTION



NOTE:

- PRECAST REINFORCED CONCRETE CB BASE, CONE AND RISER SECTIONS PER A.S.T.M. C-478 PIPE OPENINGS TO BE PRECAST IN BASE SECTION
- MINIMUM 4000 PSI PRECAST CONCRETE
- CATCH BASINS ALONG GRANITE CURB SHALL BE 3 FLANGE WITH GRANITE INLETS

BUTYL RUBBER SEALANT TO FILL AT LEAST 75% OF JOINT CAVITY

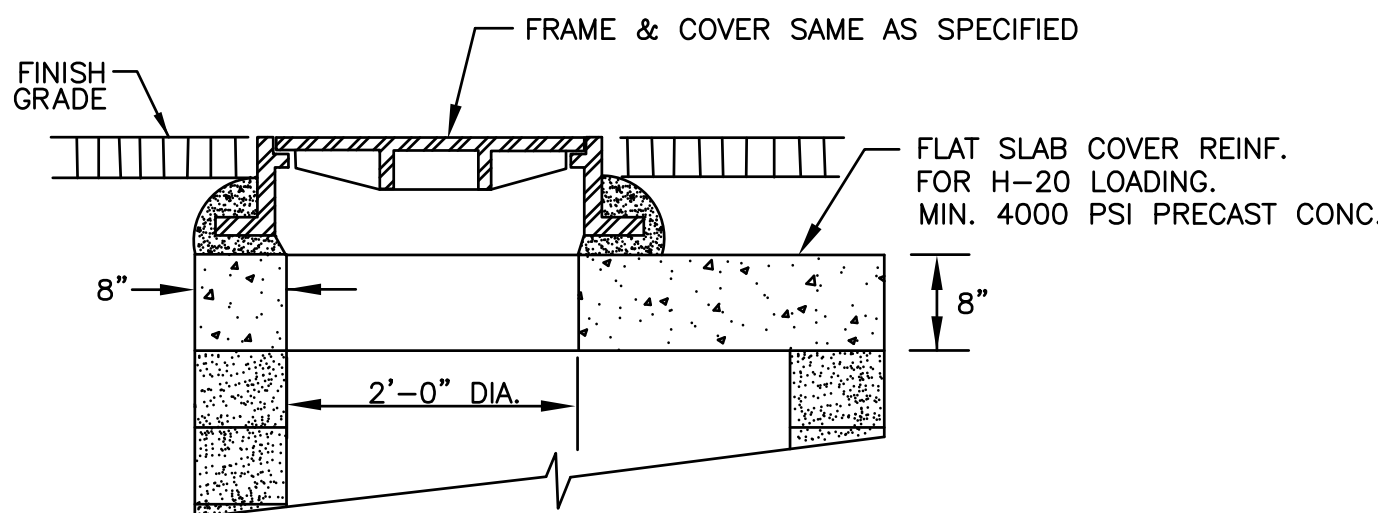


DETAIL "A"

NOT TO SCALE

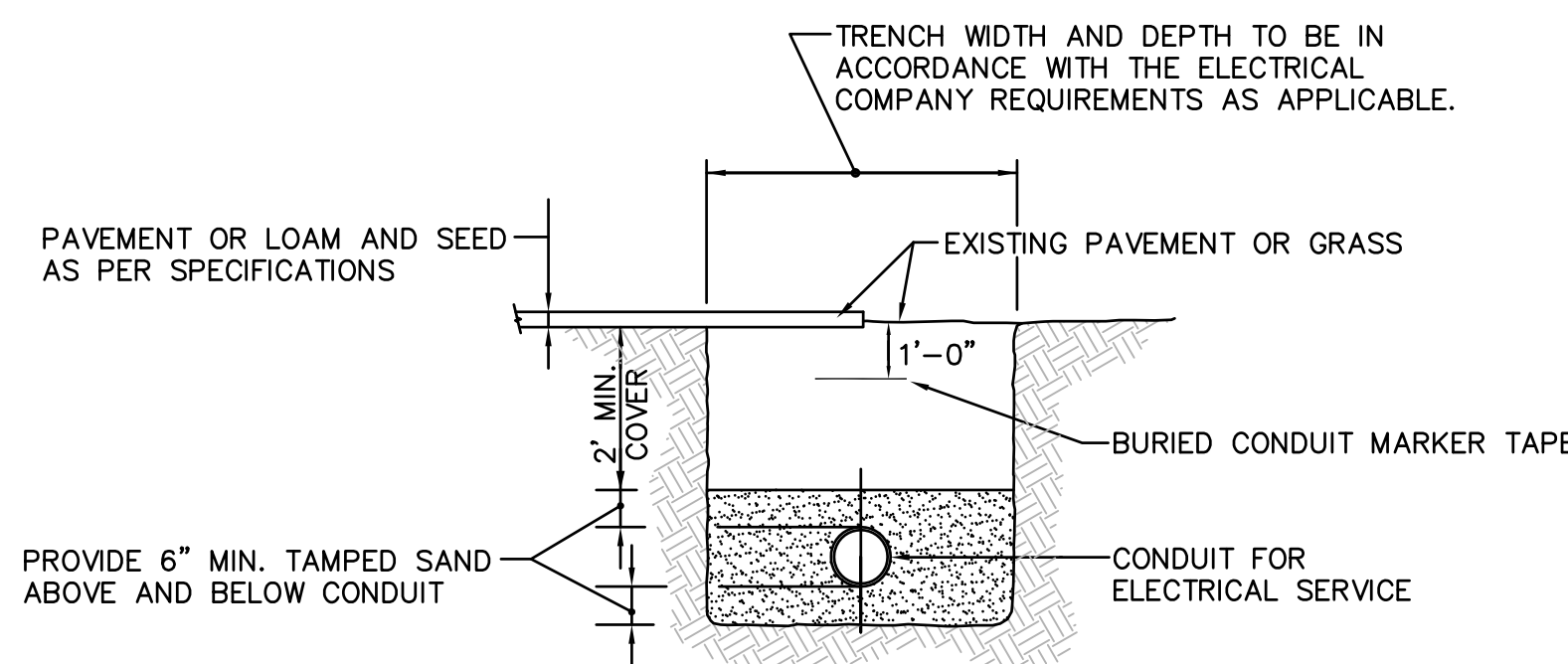
PRECAST CONCRETE CATCH BASIN

WITH GRANITE CURB INLET
NOT TO SCALE



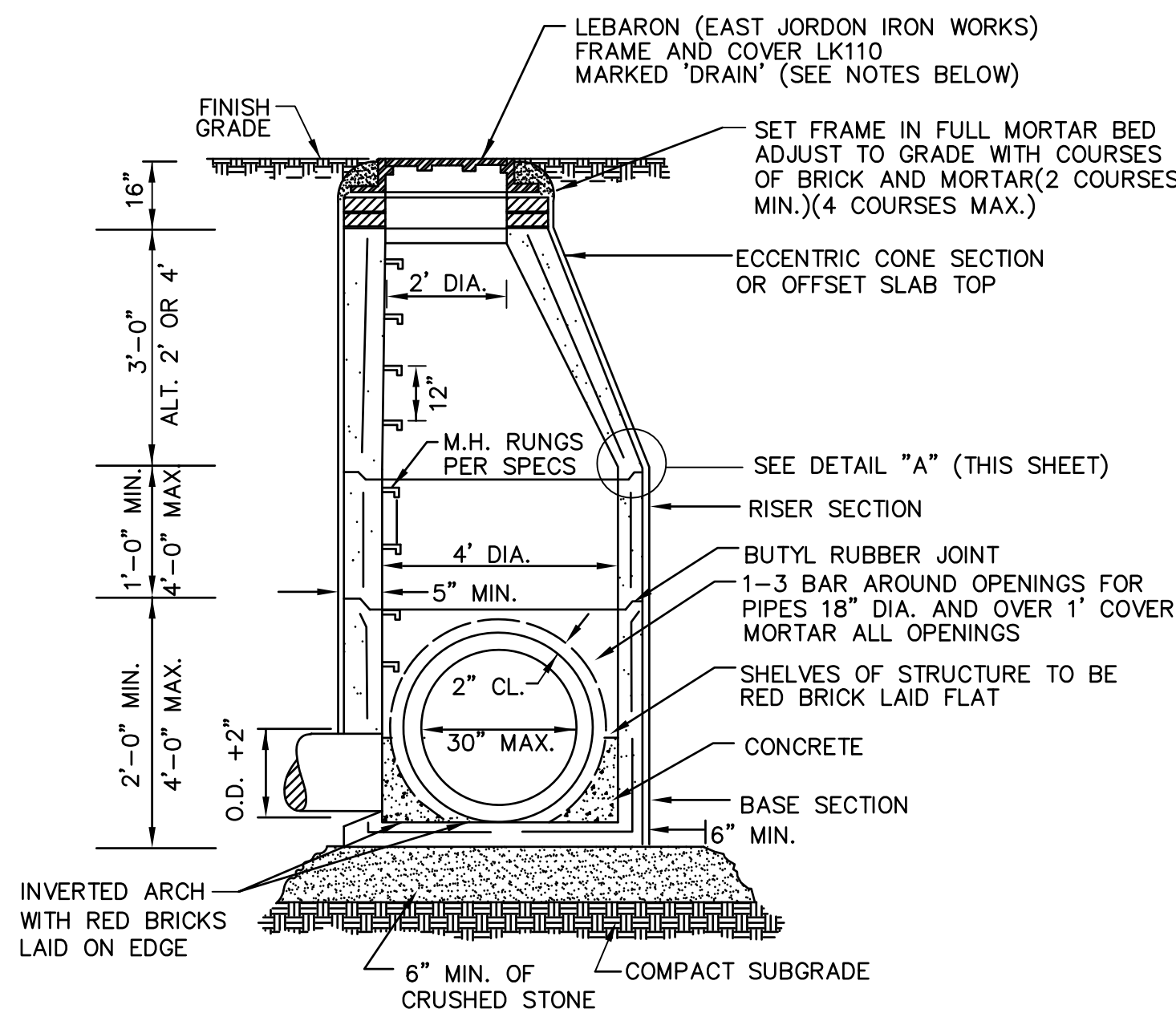
OFFSET TOP FOR ALL MANHOLES & CATCH BASINS

NOT TO SCALE



TYPICAL TRENCH DETAIL FOR ELECTRICAL CONDUIT

N.T.S.

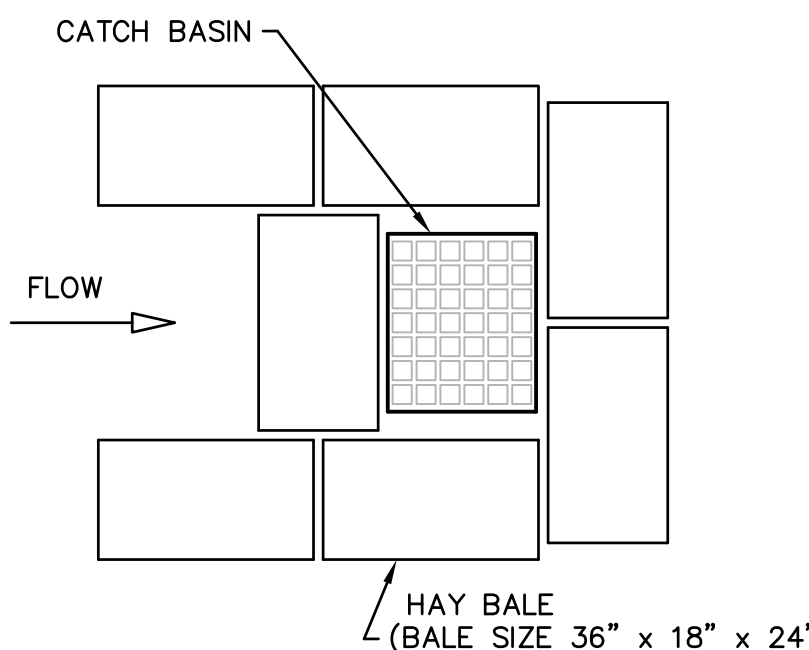


NOTE:

- PRECAST REINFORCED CONCRETE MANHOLE BASE, CONE AND RISER SECTIONS PER A.S.T.M. C-478 PIPE OPENINGS TO BE PRECAST IN BASE SECTION
- MINIMUM 4000 PSI PRECAST CONCRETE

TYPICAL PRECAST DRAIN MANHOLE

NOT TO SCALE



NOTE:

- SILT SACKS MAY BE USED INSTEAD OF HAY BALES, IF APPROVED BY THE TOWN.

EROSION CONTROL AROUND CATCH BASIN

N.T.S.

TOWN OF HULL, MASSACHUSETTS ROADWAY IMPROVEMENT PROJECT

BAY AVENUE EAST MISCELLANEOUS DETAILS III

GCG ASSOCIATES, INC.

WILMINGTON

MASSACHUSETTS

SCALE: AS NOTED

DATE: FEBRUARY 2016

JOB NO. \FILE NAME:

DESIGNED BY: H.M.C.

PLAN NO.

1050-DETAILS.DWG

DRAWN BY: H.M.C.

9 of 9

CHECKED BY: M.J.C.

