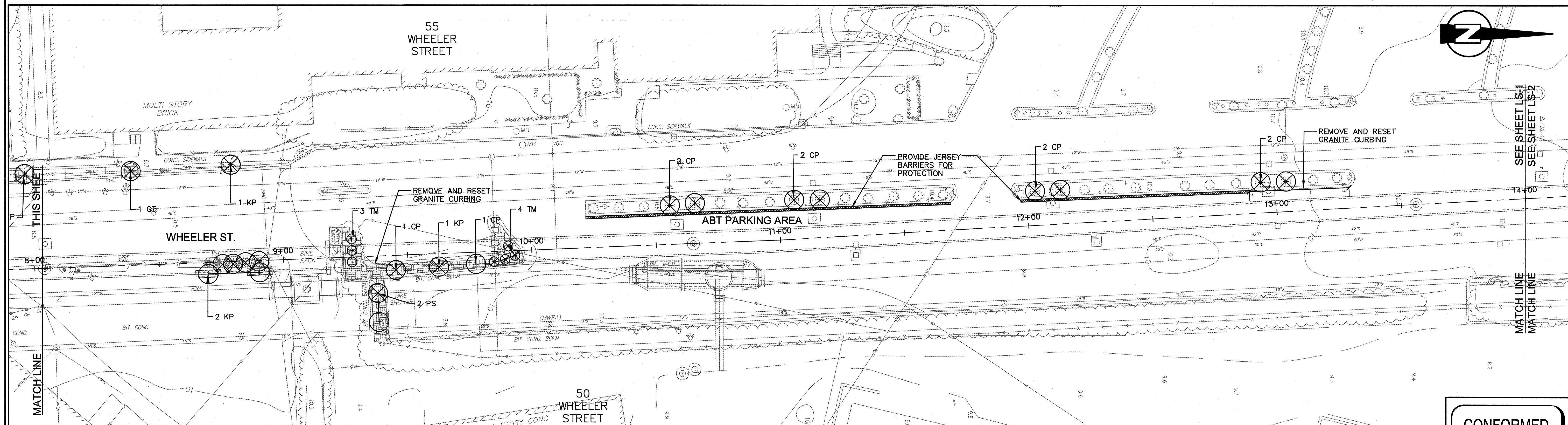
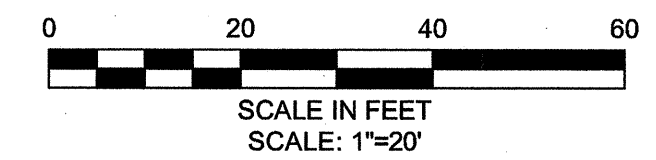


PLAN
SCALE: 1"=20'



PLAN
SCALE: 1"=20'

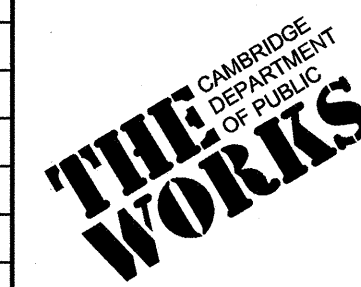
- NOTES:**
1. SEE SHEET LS-3 FOR LEGEND AND PLANT LIST
 2. SEE SHEETS L-14 THROUGH L-16 FOR TREE AND SHRUB PLANTING DETAILS
 3. SEE SHEET LG-1 FOR GENERAL PLANTING NOTES
 4. EXISTING VEGETATION TO BE PROTECTED OR TRANSPLANTED AND STORED BY THE CONTRACTOR TO THE EXTENT POSSIBLE, UNLESS OTHERWISE INDICATED.
 5. CONTRACTOR SHALL COORDINATE TREE PRUNING AND REMOVALS WITH THE CITY ARBORIST.



CONFORMED SET

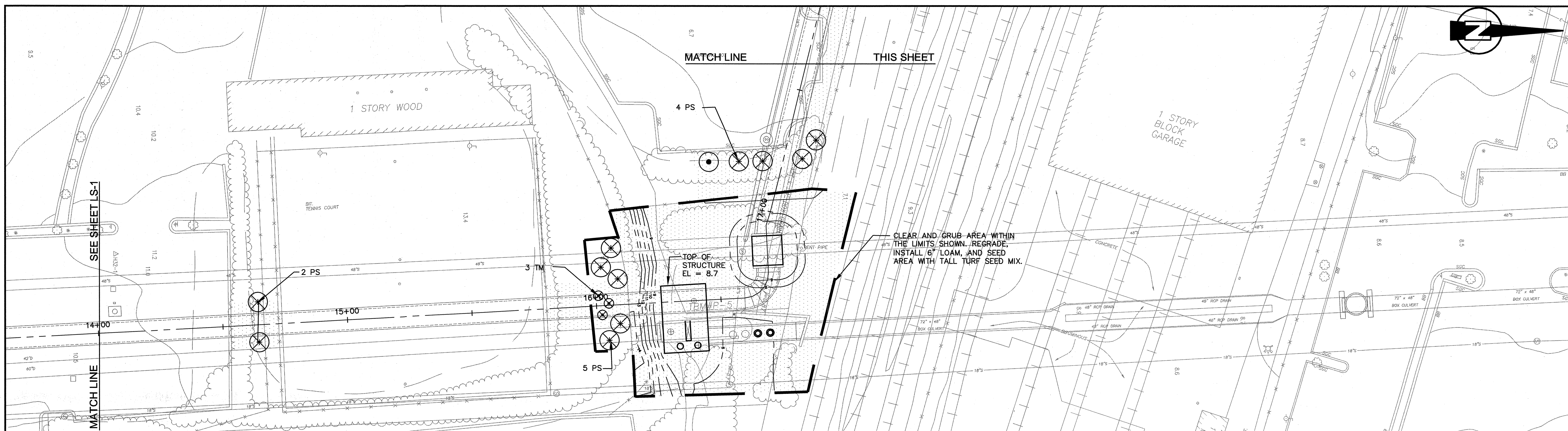


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Date	SEPTEMBER 1, 2010			
Job No.	CAM			
Designed by	EJW			
Drawn by	MKO			
Checked by	RWG/KB	No.	Description	Date
Approved by	RWG		REVISIONS	

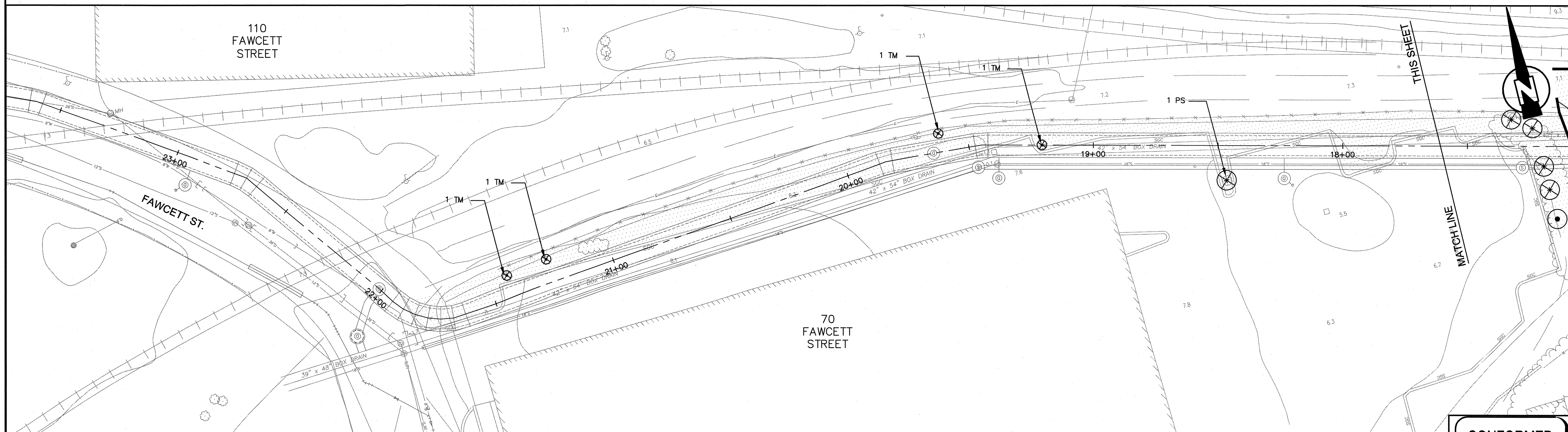


CITY OF CAMBRIDGE, MASSACHUSETTS
CAMBRIDGE PARK DRIVE AREA DRAINAGE IMPROVEMENTS
CONTRACT NO. 12
LANDSCAPING PLAN
WHEELER ST. AND ABT PARKING AREA

Sheet No.
LS-1
File No.

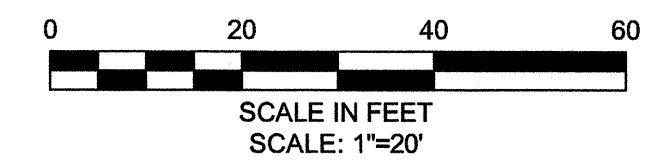


PLAN
SCALE: 1"=20'



PLAN
SCALE: 1"=20'

- NOTES:**
1. SEE SHEET LS-3 FOR LEGEND AND PLANT LIST
 2. SEE SHEETS L-14 THROUGH L-16 FOR TREE AND SHRUB PLANTING DETAILS
 3. SEE SHEET LG-1 FOR GENERAL PLANTING NOTES
 4. EXISTING VEGETATION TO BE PROTECTED OR TRANSPLANTED AND STORED BY CONTRACTOR TO THE EXTENT POSSIBLE, UNLESS OTHERWISE NOTED.
 5. CONTRACTOR SHALL COORDINATE TREE PRUNING AND REMOVALS WITH THE CITY ARBORIST.

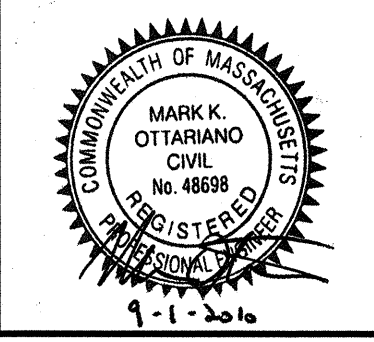


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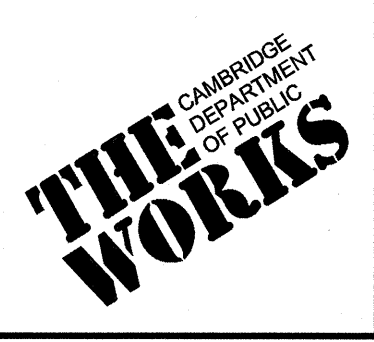
SEA
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Scientists/Engineers/Architects

MWH

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Salem, MA 01970
T: 978.740.0096
F: 978.740.0097
www.bioengineering.com

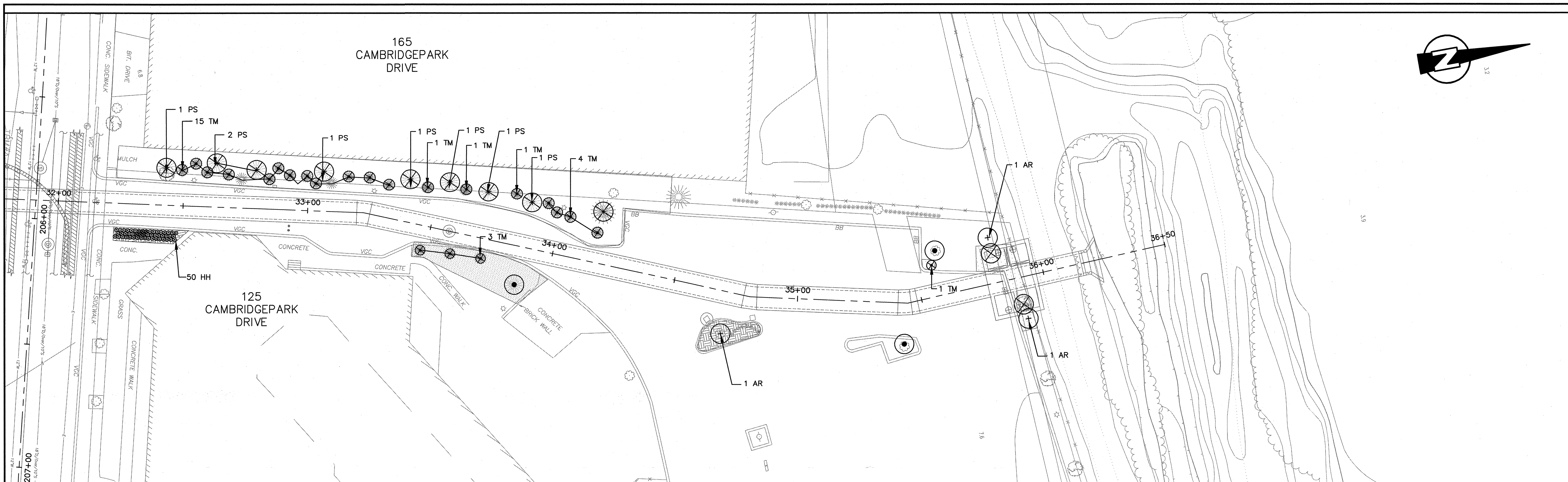


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Date	SEPTEMBER 1, 2010		
Job No.	CAM		
Designed by	EJW		
Drawn by	MKO		
Checked by	RWG/KB	No.	Description
Approved by	RWG		Date



CITY OF CAMBRIDGE, MASSACHUSETTS
CAMBRIDGEPARK DRIVE AREA DRAINAGE IMPROVEMENTS
CONTRACT NO. 12
LANDSCAPING PLAN
ABT PARKING AREA AND FAWCETT ST. EASEMENT

Sheet No.
LS-2
File No.



PLAN
SCALE: 1"=20'

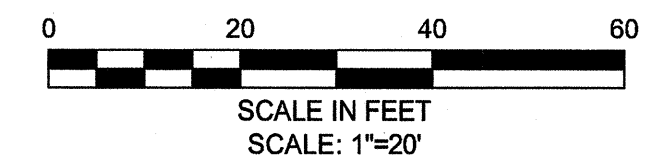
NOTE:
1. REFER TO SHEETS L-14 THROUGH L-16: FOR SHRUBS AND TREE PLANTING DETAILS.

LEGEND

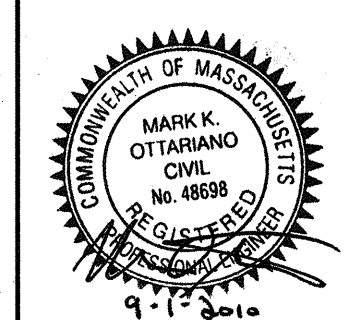
SYMBOL	BOTANICAL NAME	COMMON NAME	QUANT.	SIZE	REMARKS
TREES					
+	ACER RUBRUM 'GREEN MOUNTAIN'	GREEN MOUNTAIN RED MAPLE	3	2" - 2.5" CAL.	B&B; MATCH
⊗	CRATAEGUS CRUSGALLI VAR. INERMIS	THORNLESS HAWTHORN	10	2" - 2.5" CAL.	B&B; FULL
⊗	GLEDTISIA TRIACANTHOS 'HALKA'	HALKA THORNLESS HONEYLOCUST	5	2" - 2.5" CAL.	B&B; FULL
⊗	KOLRUETERIA PANICULATA	GOLDEN RAINTREE	9	2" - 2.5" CAL.	B&B; FULL
⊗	PINUS STROBUS	WHITE PINE	22	3" - 3.5" CAL.	B&B; FULL
⊗	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	13	2" - 2.5" CAL.	B&B; FULL
SHRUBS					
TM	TAXUS X MEDIA HATFIELDII	HATFIELD UPRIGHT YEW	40	3.5'-4' HT.	B&B
HH	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	50	#2 POT	18" O.C.

+ PROPOSED TREE OR SHRUB
 ⊗ TREE OR SHRUB TO BE REMOVED
 ⊗ TREE OR SHRUB TO BE REMOVED AND REPLACED
 ⊗ TREE OR SHRUB TO BE PRUNED AND PROTECTED
 [LOAM AND SEED] LOAM AND SEED
 [MULCH] MULCH

NOTES:
 1. THE CONTRACTOR SHALL REPLACE ALL OTHER LANDSCAPING DISTURBED DURING CONSTRUCTION BUT NOT SHOWN ON THESE DRAWINGS IN KIND WITHIN THE LIMIT OF WORK AT THE CONTRACTOR'S EXPENSE.
 2. EXISTING VEGETATION TO REMAIN SHALL BE PROTECTED OR TRANSPLANTED AND STORED BY CONTRACTOR TO THE EXTENT POSSIBLE, UNLESS OTHERWISE INDICATED.



CONFORMED SET



Scale	1"=20'		
Date	SEPTEMBER 1, 2010		
Job No.	CAM		
Designed by	EJW		
Drawn by	MKO		
Checked by	RWG/KB	No.	Description
Approved by	RWG		REVISIONS



CITY OF CAMBRIDGE, MASSACHUSETTS
 CAMBRIDGEPARK DRIVE AREA DRAINAGE IMPROVEMENTS
 CONTRACT NO. 12
 LANDSCAPING PLAN
 125 CAMBRIDGEPARK DRIVE, PLANTING TABLE AND LEGEND

Sheet No. **LS-3**
 File No.

STRUCTURAL NOTES

GENERAL

- G.1 STRUCTURAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 7TH EDITION OF THE MASSACHUSETTS STATE BUILDING CODE.
- G.2 REFER TO CIVIL AND SPECIFICATIONS FOR LOCATIONS AND DIMENSIONS OF ALL CHASES, SLOTS, INSERTS, CURBS, OPENINGS, SLEEVES, ANCHOR BOLTS, FLOOR PITCHES, ANGLE FRAMES, GATE FRAMES, AND ALL OTHER PROJECT REQUIREMENTS NOT INDICATED ON THE STRUCTURAL DRAWINGS.
- G.3 PROVIDE OPENINGS REQUIRED FOR EQUIPMENT.
- G.4 PROVIDE AND INSTALL ANCHOR BOLTS, NUTS, AND WASHERS INDICATED OR SPECIFIED, AND NON-SHRINK, NON-METALLIC GROUT REQUIRED FOR THE INSTALLATION OF ALL EQUIPMENT.
- G.5 PROVIDE SIX-INCH WATERSTOPS IN ALL CONSTRUCTION JOINTS WHERE WATERSTOPS ARE INDICATED OR SPECIFIED, AND BETWEEN DRY AREAS AND ANY SOURCE OF LIQUID INCLUDING THE GROUNDWATER. WATERSTOPS SHALL FORM A CONTINUOUS WATERTIGHT BARRIER TO PREVENT LEAKAGE.
- G.6 VERIFY AND COORDINATE DIMENSIONS OF STRUCTURAL ELEMENTS WITH THE EQUIPMENT SUPPLIER BEFORE SETTING REINFORCEMENT, EMBEDDED ITEMS AND PLACING CONCRETE. ANCHOR BOLTS TO BE SIZED AND FURNISHED BY THE EQUIPMENT SUPPLIER UNLESS OTHERWISE INDICATED OR SPECIFIED.
- G.7 THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN IN THE COURSE OF CONSTRUCTION CONDITIONS ARE UNCOVERED WHICH ARE UNANTICIPATED OR OTHERWISE APPEAR TO PRESENT A DANGEROUS CONDITION.
- G.8 BECAUSE THE WORK INVOLVES RETROFITTING AND MODIFICATIONS OF EXISTING STRUCTURES, THE CONTRACTOR SHALL FIELD MEASURE AND VERIFY EXISTING CONDITIONS AS SHOWN ON THE DRAWINGS. IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

DESIGN CRITERIA

- D.1 SPECIFICATIONS:
 - AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION (AREMA), AREMA MANUAL OF RAILWAY ENGINEERING, 2009
 - COMMONWEALTH OF MASSACHUSETTS STATE BUILDING CODE, 7TH EDITION.
 - AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES."
 - AMERICAN CONCRETE INSTITUTE (ACI), COMMITTEE REPORT 350, "ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" (350R-89).
- D.2 LOADINGS:
 - TRAFFIC LOADING - AASHTO HS-20, IMPACT = 30%
 - LATERAL SOIL PRESSURES: 60 PCF ABOVE GROUNDWATER
90 PCF BELOW GROUNDWATER
2 FT. EQUIV. SOIL WT. SURCHARGE
 - ELEVATED BOARDWALK 85 psf.
 - LATERAL WALL SURCHARGE SEE AASHTO SPECIFICATIONS.
 - RAILROAD LOADING AREMA - COOPER E-80
- D.3 FOR THE DESIGN OF STRUCTURES, THE GROUND WATER LEVEL IS ASSUMED TO BE EL. 5.0.

FOUNDATIONS

- F.1 REFER TO EARTHWORK, SPECIFICATION SECTION 02210 FOR FOUNDATION REQUIREMENTS.
- F.2 DO NOT BACKFILL STRUCTURES UNTIL THE WALLS & ROOF SLABS HAVE ATTAINED THEIR SPECIFIED COMPRESSIVE STRENGTH.

DAMP PROOFING

- 1. BITUMINOUS DAMP PROOFING SHALL BE APPLIED TO ALL BELOW GRADE EXTERIOR WALL AND TOP SLAB SURFACES OF CONCRETE STRUCTURES.
- 2. REFER TO SPECIFICATION SECTION 07160, BITUMINOUS DAMP PROOFING.

REINFORCING STEEL

- R.1 REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60, DEFORMED BARS, $F_y = 60,000$ PSI.
- R.2 WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. WHEN INDICATED OR SPECIFIED, LAP SPLICE AT LEAST TWO FULL MESHES, AND STAGGER SPLICES IN EITHER DIRECTION.
- R.3 CONCRETE COVER FOR REINFORCEMENT, UNLESS OTHERWISE INDICATED, SHALL BE AS FOLLOWS:

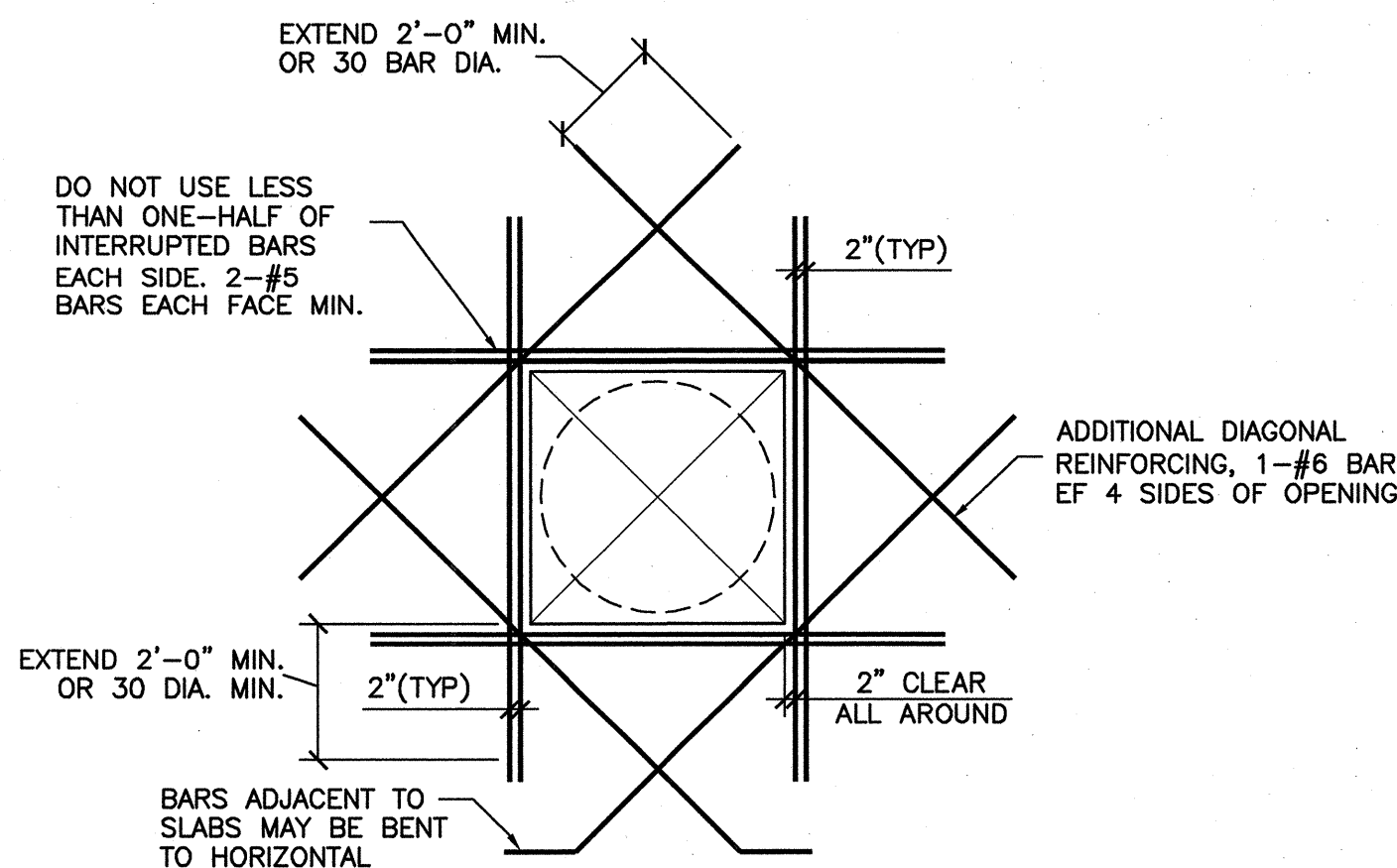
FOOTINGS, FOUNDATIONS, AND OTHER CONCRETE CAST AGAINST EARTH	3"
ALL OTHER CONCRETE	2"
- R.4 FOR FOUNDATION WALLS AND FOOTINGS, PROVIDE CORNER BARS AND DOWELED INTO ADJACENT WALLS AND FOOTINGS AS SHOWN ON THE DRAWINGS.

CONCRETE

- C.1 CONCRETE WORK AND REINFORCING BAR DETAILS SHALL CONFORM TO THE LATEST ACI STANDARDS, ACI 318, 301, ACI 350 AND ACI SP-66 (DETAILING MANUAL). REFER TO SPECIFICATION SECTION 03300.
- C.2 CAST-IN-PLACE CONCRETE SHALL BE AIR ENTRAINED AND SHALL HAVE A SPECIFIED COMPRESSIVE STRENGTH OF 4,000 PSI TYPE B, UNLESS OTHERWISE NOTED. PRECAST CONCRETE SHALL HAVE A SPECIFIED COMPRESSIVE STRENGTH OF 5000 PSI. REFER TO SPECIFICATION SECTIONS 02715, 03300 AND 03410.
- C.3 FORMWORK SHALL BE LEFT IN PLACE IN CONFORMANCE WITH THE SPECIFICATIONS.
- C.4 CONCRETE SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER.
- C.5 PROVIDE CLASS B SPLICE FOR CONTINUOUS REINFORCEMENT UNLESS OTHERWISE INDICATED OR SPECIFIED.
- C.6 PROVIDE REINFORCING BAR SUPPORTS, SPACERS AND ACCESSORIES RECOMMENDED IN ACI SP-66, ACI DETAILING MANUAL. PROVIDE PLASTIC-BOOTED ACCESSORIES, SUCH AS SLAB BOLSTERS, AND BEAM AND SLAB CHAIRS IN CONTACT WITH EXPOSED SURFACES. PROVIDE NUMBER 5 BAR MINIMUM FOR SUPPORT BARS.
- C.7 PROVIDE ADDITIONAL REINFORCEMENT ALONG EACH SIDE OF OPENINGS, AS INDICATED IN STANDARD DETAILS, UNLESS OTHERWISE INDICATED OR SPECIFIED.
- C.8 SET AND TIE ALL REINFORCEMENT BEFORE PLACING CONCRETE. SETTING DOWELS AND REINFORCEMENT INTO WET CONCRETE IS PROHIBITED.
- C.9 DO NOT PLACE CONCRETE IN BEAMS, OR SLABS UNTIL THE CONCRETE IN THE SUPPORTING WALLS HAS OBTAINED INITIAL SET.
- C.10 PLACE ELEVATED SLABS AND BEAMS MONOLITHICALLY UNLESS OTHERWISE INDICATED OR SPECIFIED.
- C.11 ROUGHEN CONCRETE SURFACE TO A FULL AMPLITUDE OF 1/4" AT CONSTRUCTION JOINTS WHERE KEYED JOINTS ARE NOT INDICATED.
- C.12 REINFORCING STEEL TO BE CONTINUOUS THROUGH CONSTRUCTION JOINTS, UNLESS OTHERWISE INDICATED.
- C.13 PROVIDE 3/4" CHAMFER AT ALL EXPOSED EDGES OF CONCRETE, U.N.O.
- C.14 CONCRETE FLATWORK SHALL BE WET CURED FOR 7 DAYS, MINIMUM.

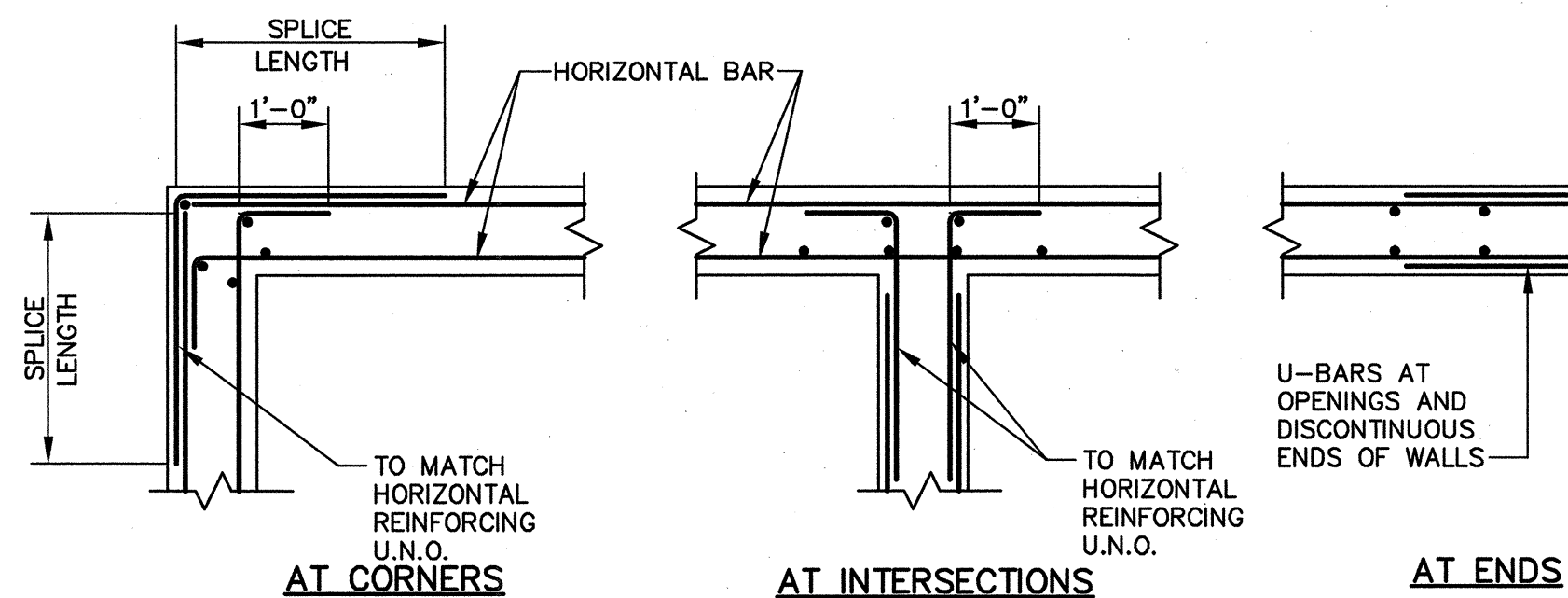
STRUCTURAL ABBREVIATIONS

⊕	AT	M.O.	MASONRY OPENING
B/C	BOTTOM CHORD OF TRUSS	MAX.	MAXIMUM
BRNG.	BEARING	MIN.	MINIMUM
BOT	BOTTOM	N.S.R.G.	NONMETALLIC SHRINK RESISTANT GROUT
CANT.	CANTILEVER	#	NUMBER
CIP	CAST IN PLACE	O.C.	ON CENTER
⊕	CENTER LINE	P.V.M.T.	PAVEMENT
C.F.	COLD FORMED	PL	PLATE
CMU	CONCRETE MASONRY UNIT	±	PLUS OR MINUS
CONN.	CONNECTION	P.A.F.	POWER ACTUATED FASTENERS
C.J.	CONSTRUCTION JOINT	P.T.	PRESSURE TREATED
CONT.	CONTINUOUS	S.E.S.W.	SELF EXPANDING STRIP WATERSTOP
DIA.	DIAMETER	S.C.C.J.	SAW CUT CONTROL JOINT
E.F.	EACH FACE	STAGG.	STAGGERED
E.W.	EACH WAY	S.S.	STAINLESS STEEL
"EL., ELEV"	ELEVATION	T/C	TOP CHORD OF TRUSS
ERV	ENERGY RECOVERY UNIT	T&B	TOP AND BOTTOM
EXIST.	EXISTING	TOC	TOP OF CONCRETE
EXT.	EXTERIOR	TOW	TOP OF WALL
FND.	FOUNDATION	TYP.	TYPICAL
GALV.	GALVANIZED	U.N.O.	UNLESS NOTED OTHERWISE
H.S.A.	HEADED STUD ANCHORS	(V.I.F.)	VERIFY IN FIELD
H.P.	HIGH POINT	V.E.F.	VERTICAL EACH FACE
H.E.F.	HORIZONTAL EACH FACE	WSCJ	WATERSTOPPED CONSTRUCTION JOINT
L.P.	LOW POINT	WWF	WELDED WIRE FABRIC



TYPICAL ADDITIONAL REINFORCING AT OPENINGS LARGER THAN 12"

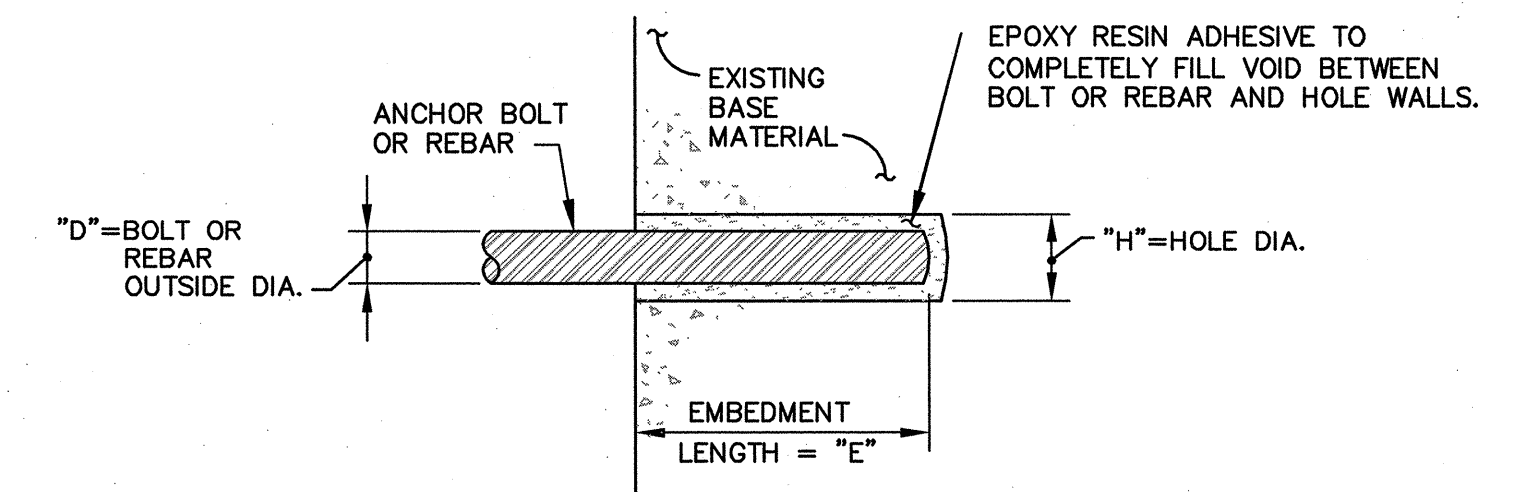
SCALE: 1/2" = 1'-0"



NOTE: ALL SPLICES TO BE CLASS "B" (1.3 ld) UNLESS NOTED OTHERWISE. DEVELOPMENT LENGTHS $l_d = 38db$ #3-#6, $47db$ #7-#11

TYPICAL HORIZ. REINF. DETAILS

SCALE: NONE

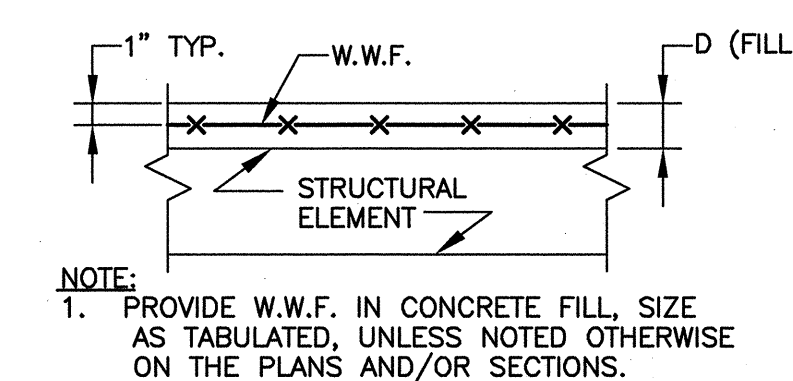


	BOLT OR REBAR OUTSIDE DIAMETER "D" (INCHES)	REQUIRED EMBEDMENT LENGTH "E" (INCHES)	REQUIRED HOLE DIAMETER "H" (INCHES)	REQUIRED ALLOWABLE ADHESIVE BOND STRENGTH IN 4,000psi CONCRETE USING S.F. = 4.0
ANCHOR BOLTS	3/8	3 3/8	7/16	2,270
	1/2	4 1/2	9/16	4,360
	5/8	5 5/8	3/4	7,545
	3/4	6 3/4	7/8	9,735
	7/8	7 7/8	1	10,595
	1	9	1 1/8	14,890
	1 1/4	11 1/4	1 3/8	22,940
	1 1/2	13 1/2	1 5/8	32,360
REBAR	#3 BAR	4 1/2	1/2	3,970
	#4 BAR	6	5/8	6,590
	#5 BAR	7 1/2	3/4	9,825
	#6 BAR	9	7/8	13,735
	#7 BAR	10 1/2	1	18,210
	#8 BAR	12	1 1/8	23,465
	#9 BAR	13 1/2	1 3/8	32,015

TYPICAL EPOXY DOWELLING DETAIL & SCHEDULE

NOTES:

1. DRILL HOLES, CLEAN OUT AND INSTALL EPOXY AND BOLT OR REBAR IN STRICT CONFORMANCE WITH EPOXY MANUFACTURER'S WRITTEN RECOMMENDATIONS.
2. UNLESS OTHERWISE INDICATED ON DRAWINGS, PROVIDE THE EMBEDMENT LENGTH AND HOLE DIAMETER INDICATED IN THE SCHEDULE ABOVE, FOR THE BOLT OR REBAR SIZE INDICATED ON THE DRAWINGS.
3. REQUIRED EPOXY BOND STRENGTHS ARE BASED ON A SAFETY FACTOR (S.F.) OF 4.0.
4. PROVIDE STAINLESS STEEL SCREEN RODS IN HOLES IN HOLLOW BASE MATERIALS (MASONRY CAVITY WALLS).
5. UNLESS OTHERWISE INDICATED ALL ANCHOR BOLTS SHALL BE STAINLESS STEEL ANCHORS, AISI TYPE 316 (ASTM A193).

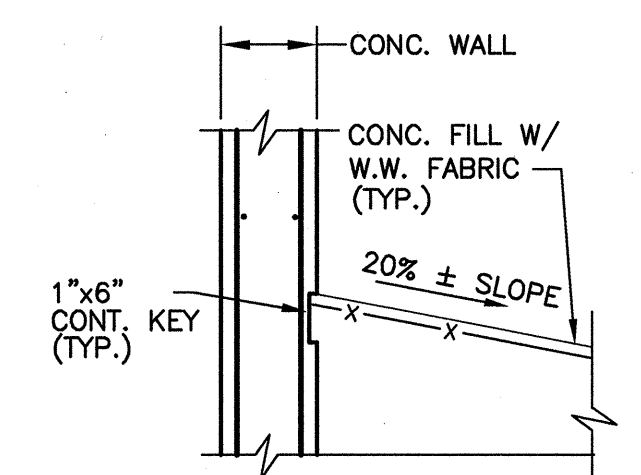


NOTE: 1. PROVIDE W.W.F. IN CONCRETE FILL, SIZE AS TABULATED, UNLESS NOTED OTHERWISE ON THE PLANS AND/OR SECTIONS.

D	W.W.F.
2" TO 4"	6x6 - W 1.4 x W 1.4
5" TO 8"	6x6 - W 2.0 x W 2.0
9" PLUS	6x6 - W 2.9 x W 2.9

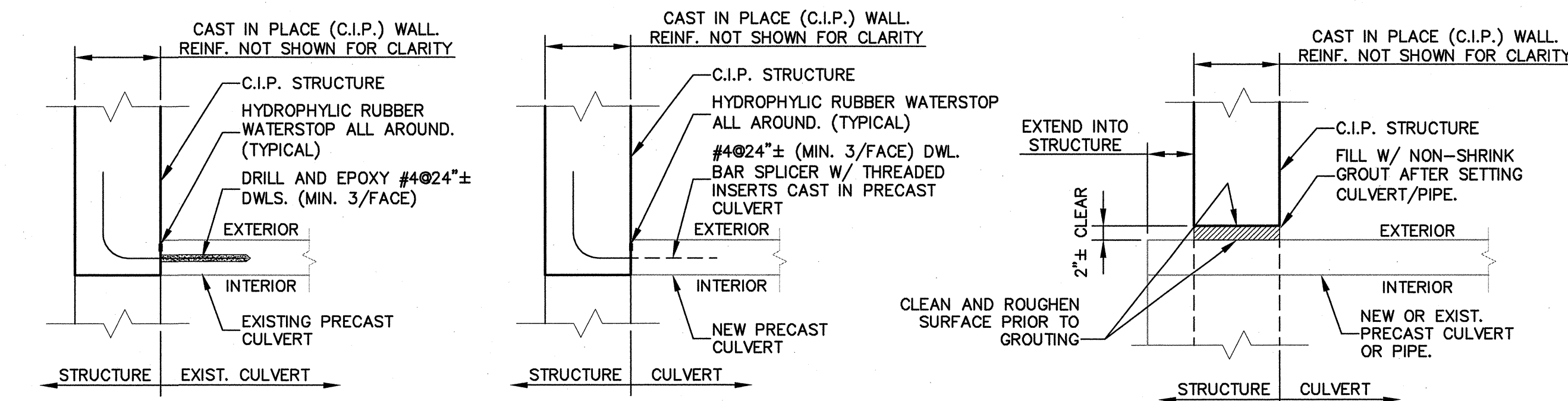
TYPICAL W.W.F. FOR CONCRETE FILL

SCALE: N.T.S.



CONTINUOUS KEY FOR CONCRETE FILL NEAR WALL

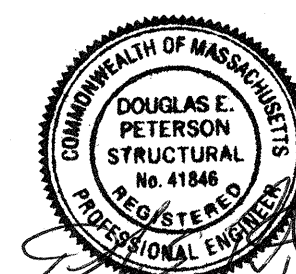
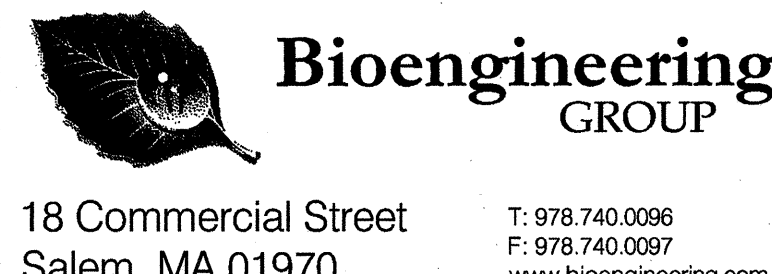
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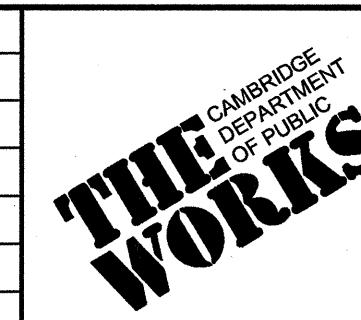
TYPICAL CULVERT/PIPE CONNECTIONS TO STRUCTURES

SCALE: NONE

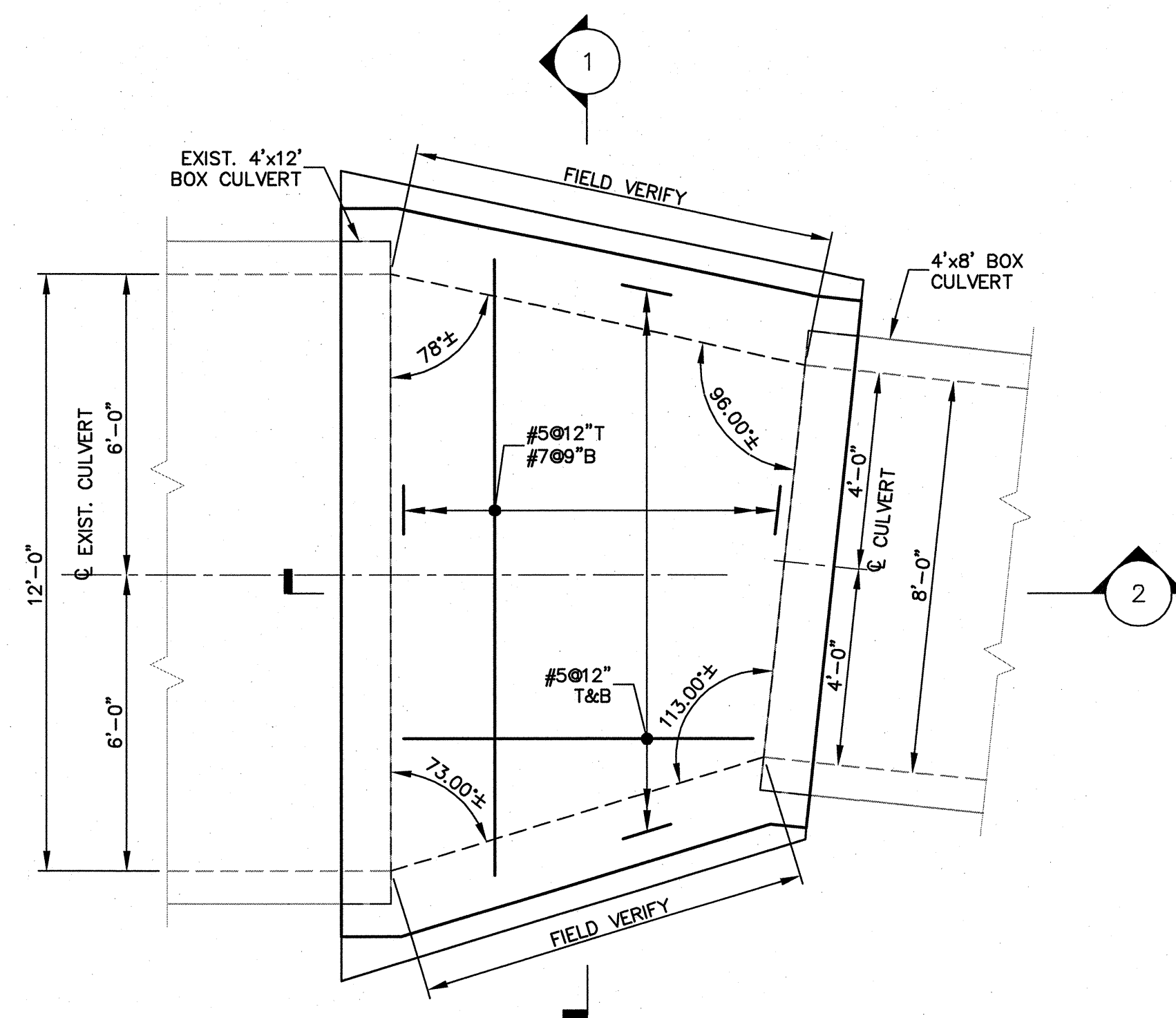
CONFORMED SET



Scale	AS NOTED
Date	SEPTEMBER 1, 2010
Job No.	1998400.12
Designed by	JM
Drawn by	FJM
Checked by	JFM
Approved by	JBC



CITY OF CAMBRIDGE, MASSACHUSETTS		Sheet No.
CAMBRIDGE PARK DRIVE AREA DRAINAGE IMPROVEMENTS		SG-1
CONTRACT NO. 12		File No.
STRUCTURAL GENERAL NOTES AND TYPICAL DETAILS		

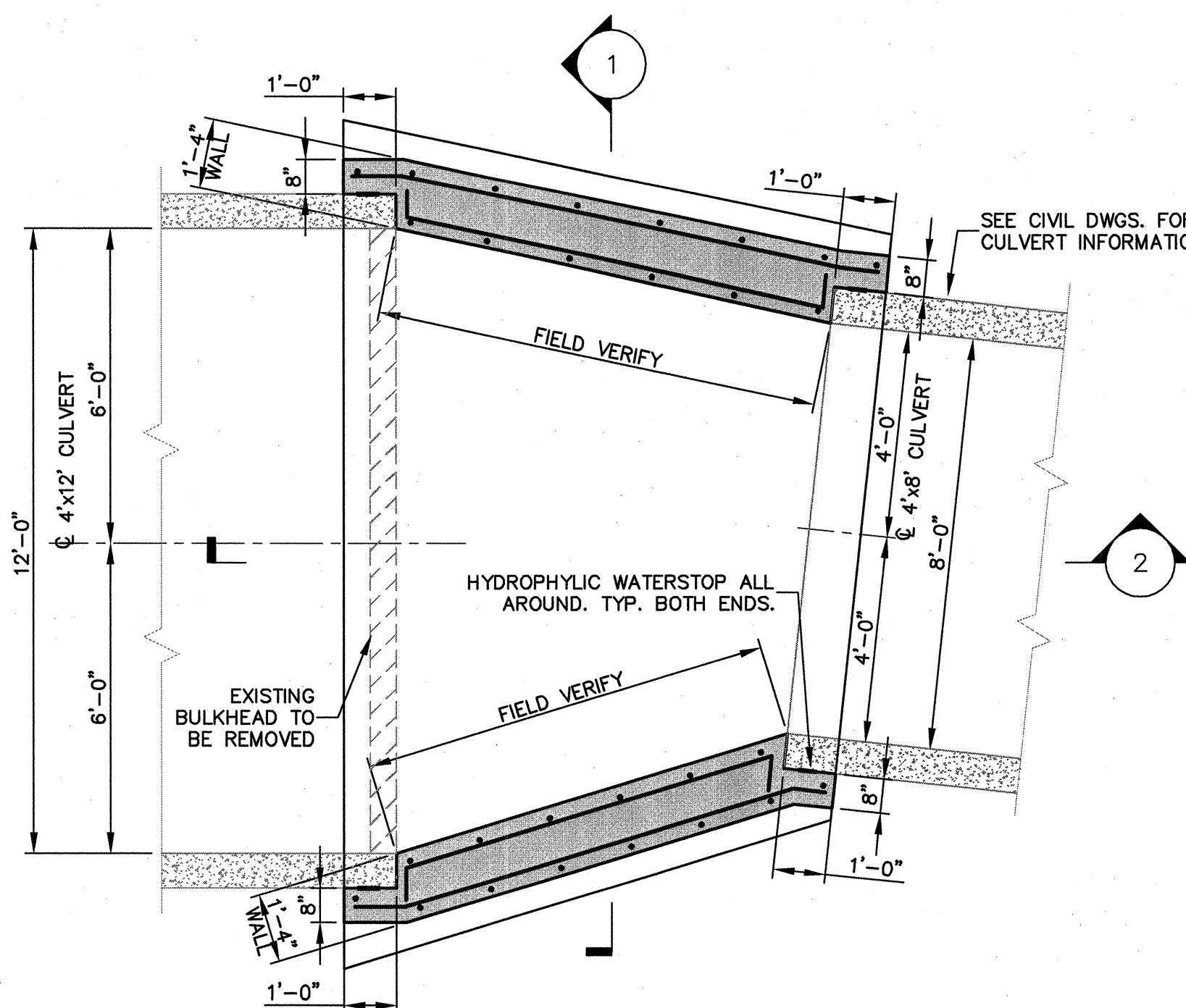


TOP PLAN

3/8" = 1'-0"

NOTES:

1. SLAB IS DESIGNED FOR AASHTO HS-20 LOADING.
2. VERIFY OVERALL DIMENSIONS BASED ON EXISTING CONDITIONS.
3. COORDINATE WITH CIVIL DWGS. FOR ADDITIONAL INFORMATION, STATIONS, & ELEVATIONS. (SEE DWG C-04)

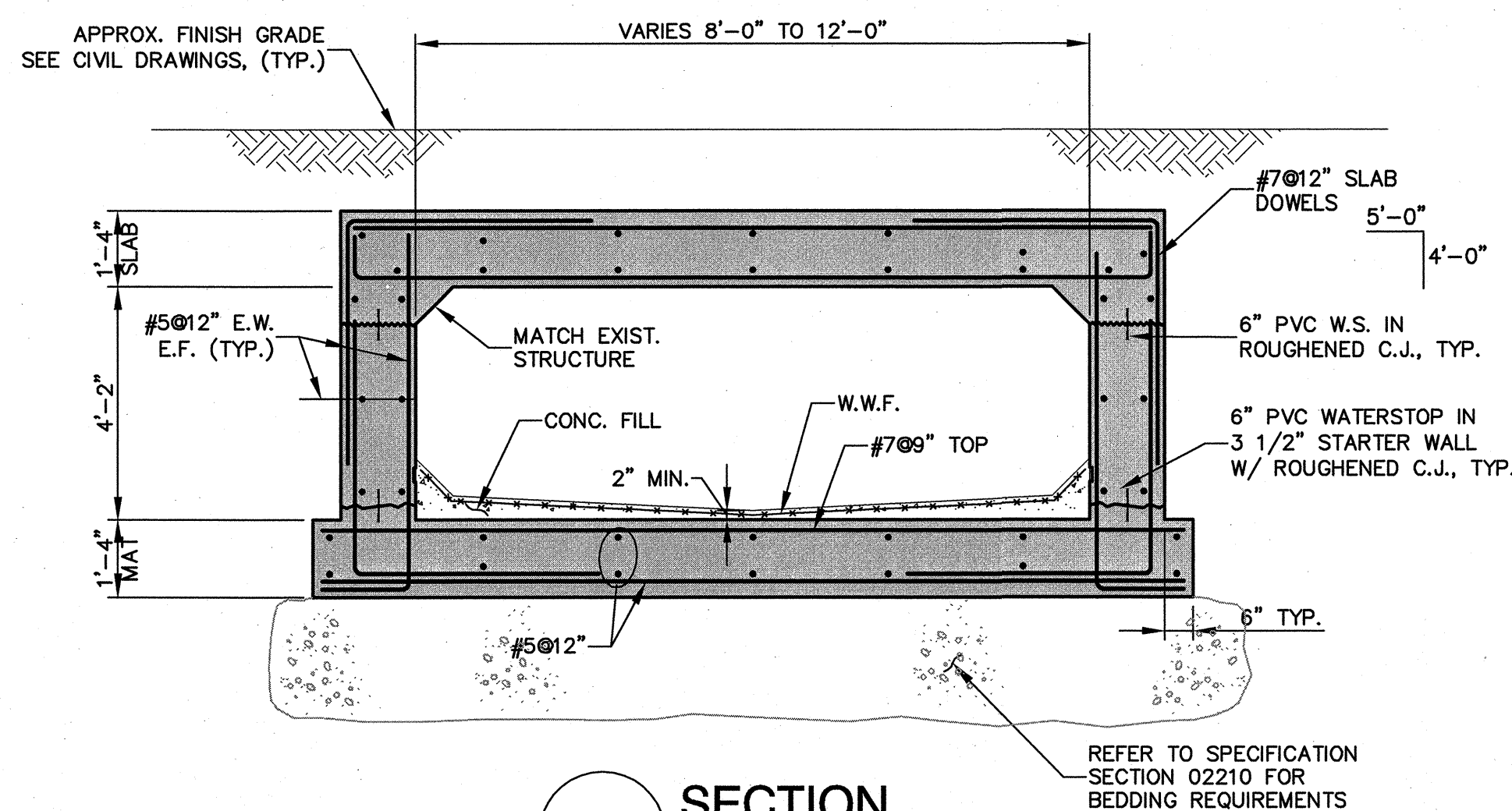


BOTTOM PLAN

3/8" = 1'-0"

NOTES:

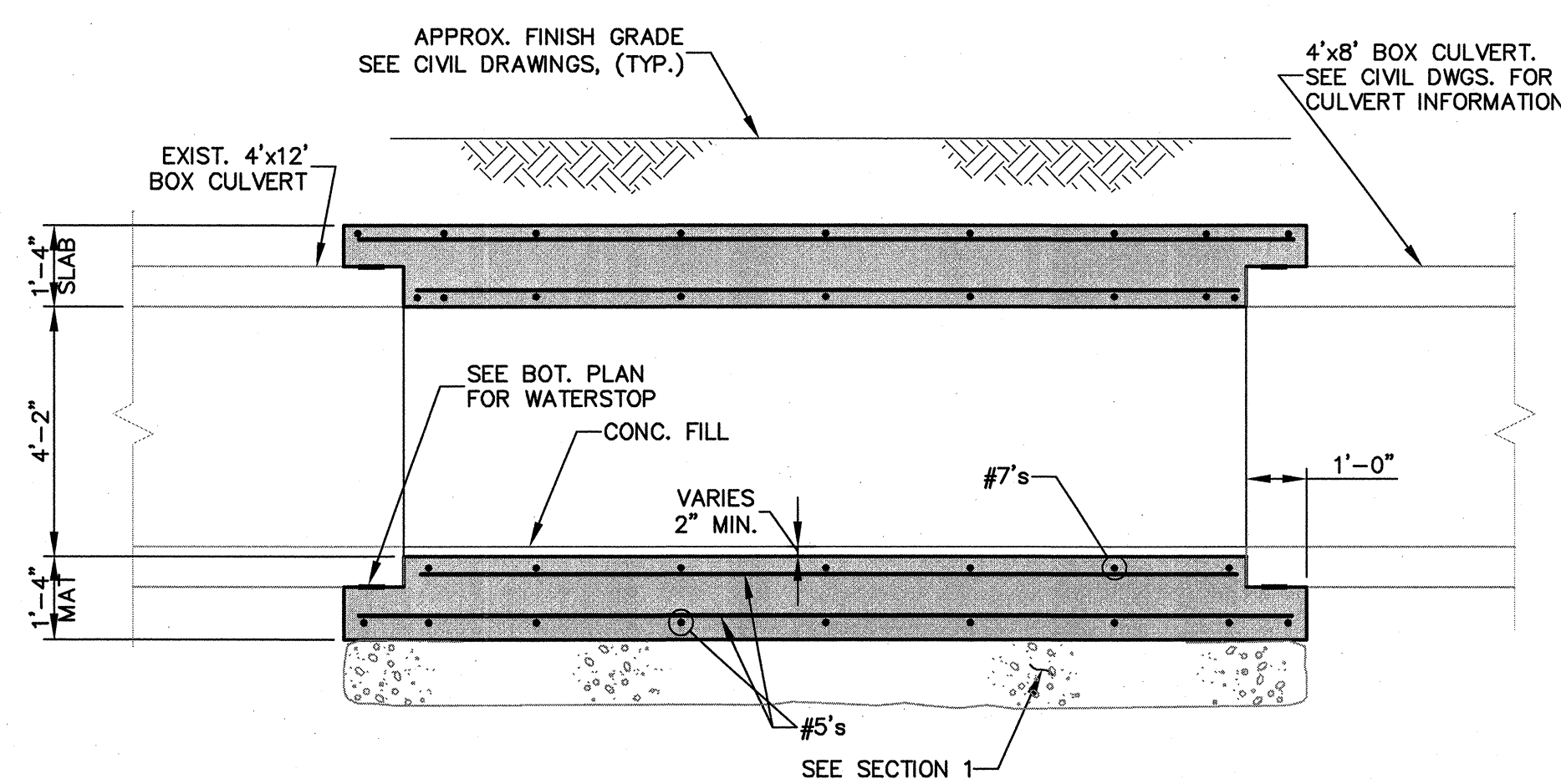
1. THE CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE STRUCTURE FROM BUOYANCY DURING CONSTRUCTION.
2. SEE STANDARD DETAIL, TYPICAL WELDED WIRE FABRIC FOR CONCRETE FILL ON DWG SG-1.
3. CONCRETE FILL SHALL BE CLASS "A" 3/8" PEASTONE MIX.



1 SECTION

3/8" = 1'-0"

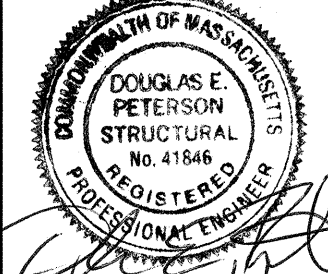
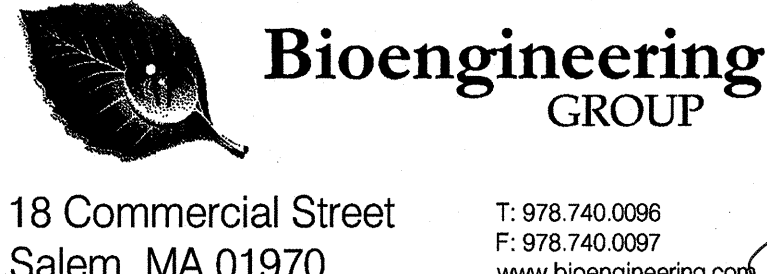
REFER TO SPECIFICATION SECTION 02210 FOR BEDDING REQUIREMENTS



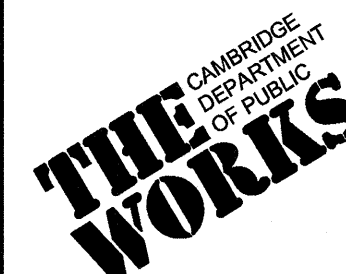
2 SECTION

3/8" = 1'-0"

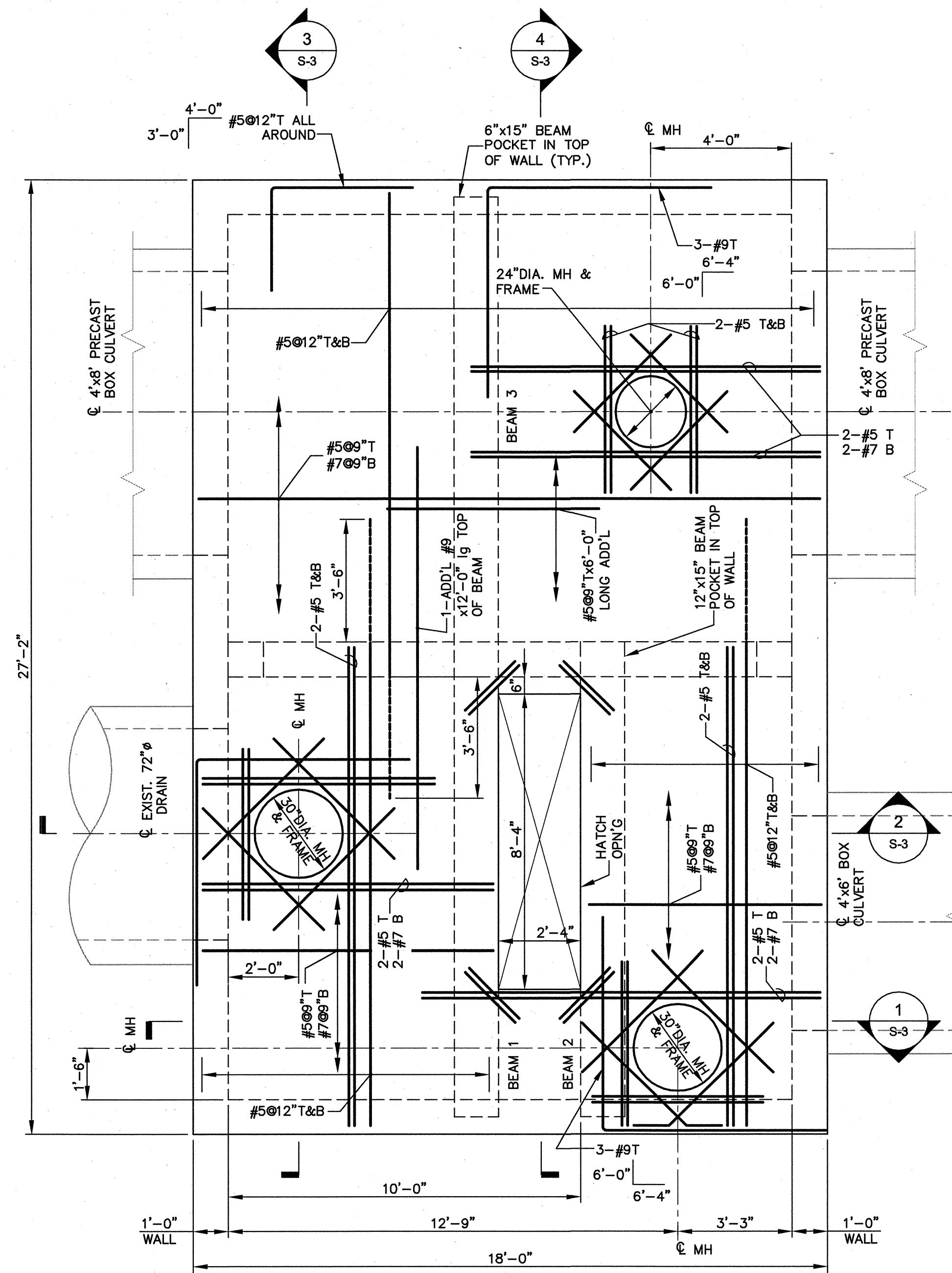
CONFORMED SET



Scale	AS NOTED		
Date	SEPTEMBER 1, 2010		
Job No.	1998400.12		
Designed by	GPP		
Drawn by	MEG		
Checked by	DEP	No.	Description
Approved by	JBC		Date



CITY OF CAMBRIDGE, MASSACHUSETTS	Sheet No.
CAMBRIDGEPARK DRIVE AREA DRAINAGE IMPROVEMENTS	S-1
CONTRACT NO. 12	File No.
CULVERT TRANSITION STRUCTURE	
PLANS AND SECTIONS	

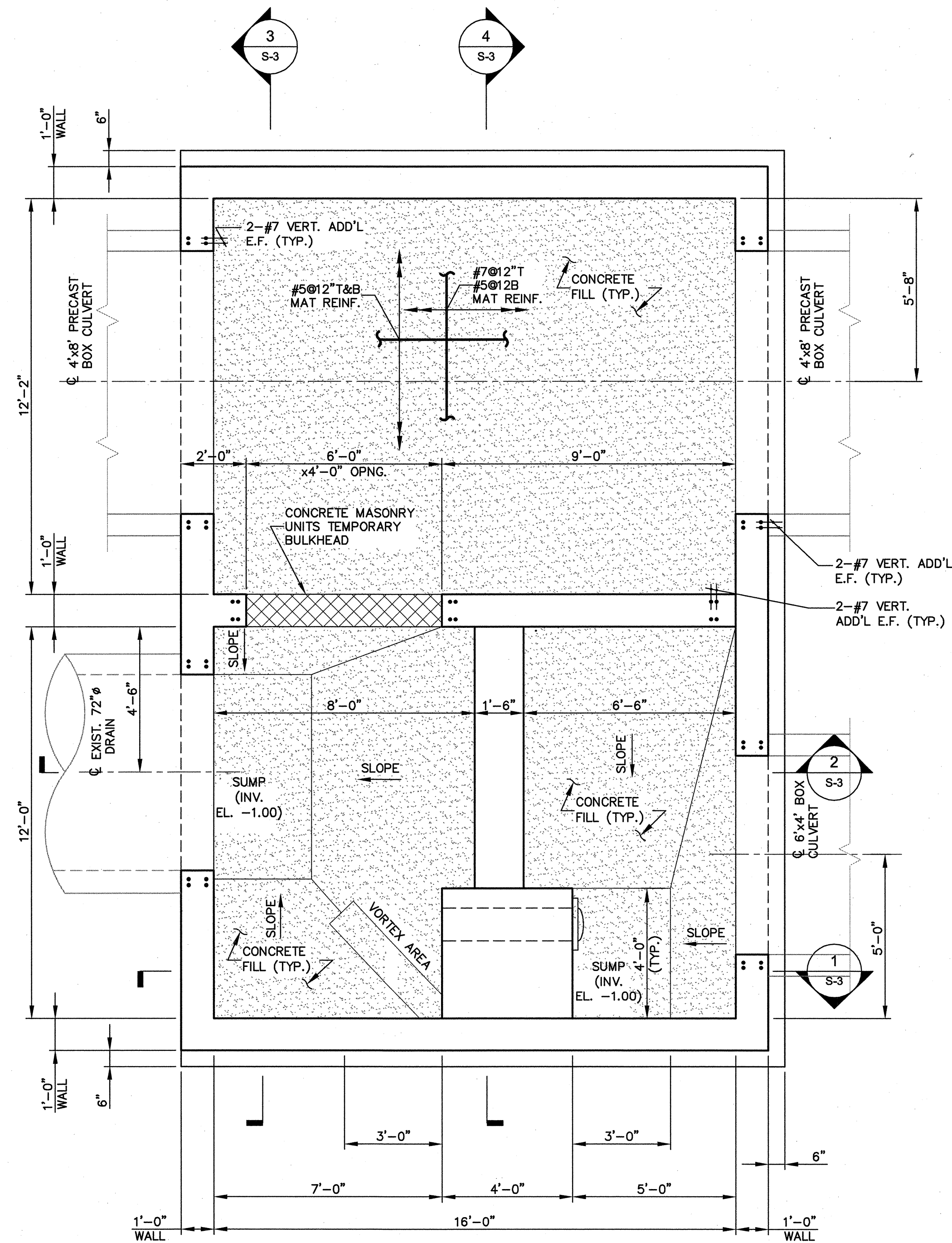


TOP PLAN

3/8" = 1'-0"

NOTES:

1. SLAB IS DESIGNED FOR AASHTO HS-20 LOADING.
2. VERIFY ALL DIMENSIONS BASED ON ACTUAL PIPE THICKNESSES AND EXISTING CONDITIONS.
3. COORDINATE WITH CIVIL DWGS C-03, CG-11 AND CG-12. FOR ADDITIONAL INFORMATION, STATIONS & ELEVATIONS.
4. FOR ADDITIONAL REINFORCING AROUND OPENING SEE SHEET SG-1.



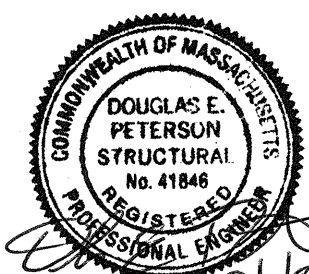
BOTTOM PLAN

3/8" = 1'-0"

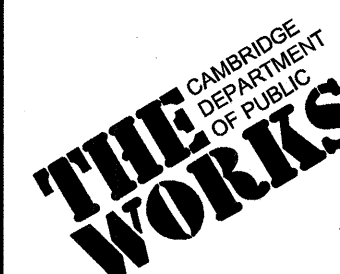
NOTES:

1. THE CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE STRUCTURE FROM BUOYANCY DURING CONSTRUCTION.
2. SEE STANDARD DETAIL, TYPICAL WELDED WIRE FABRIC FOR CONCRETE FILL ON DWG SG-1.
3. CONCRETE FILL SHALL BE CLASS "A" 3/8" PEASTONE.

CONFORMED SET

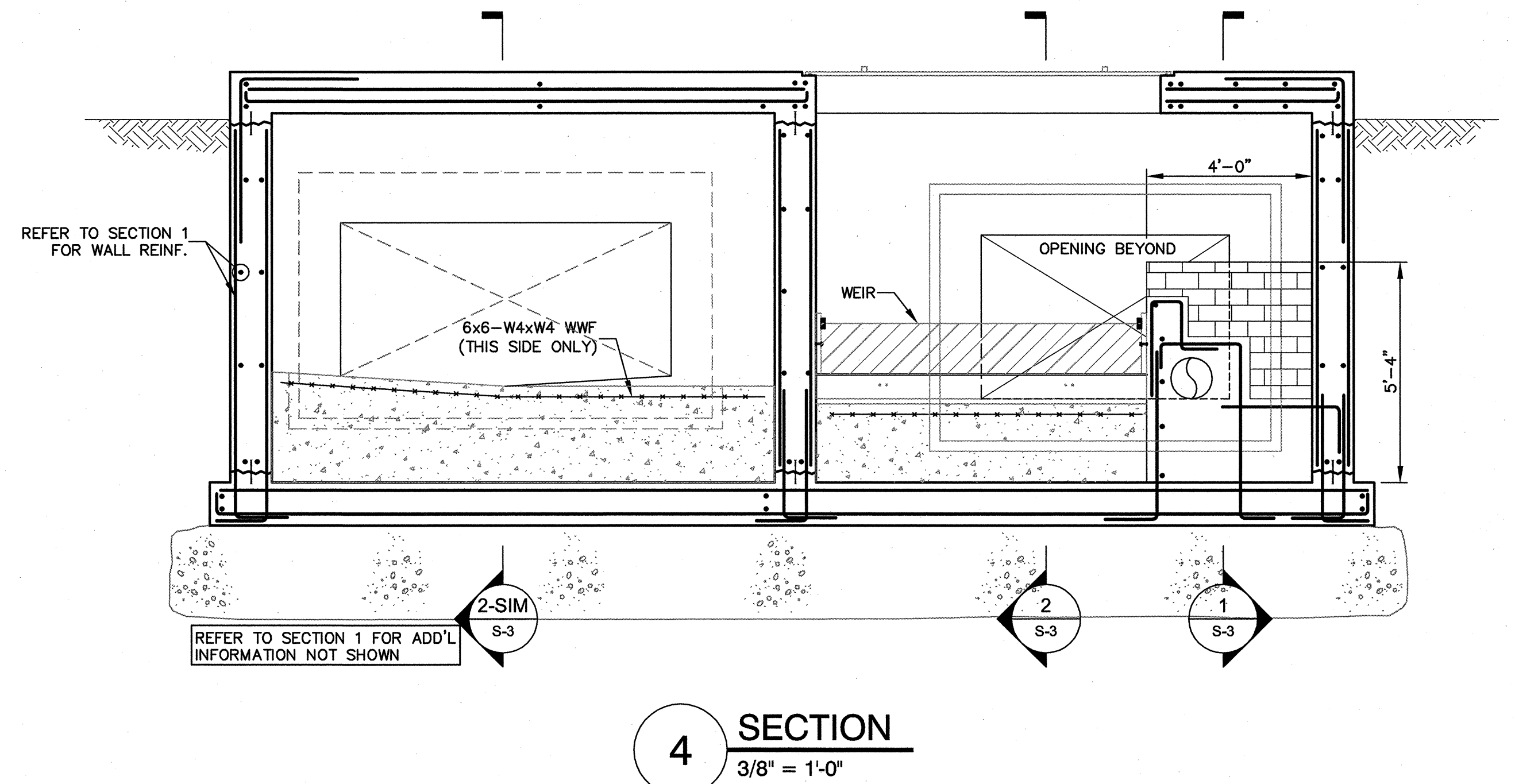
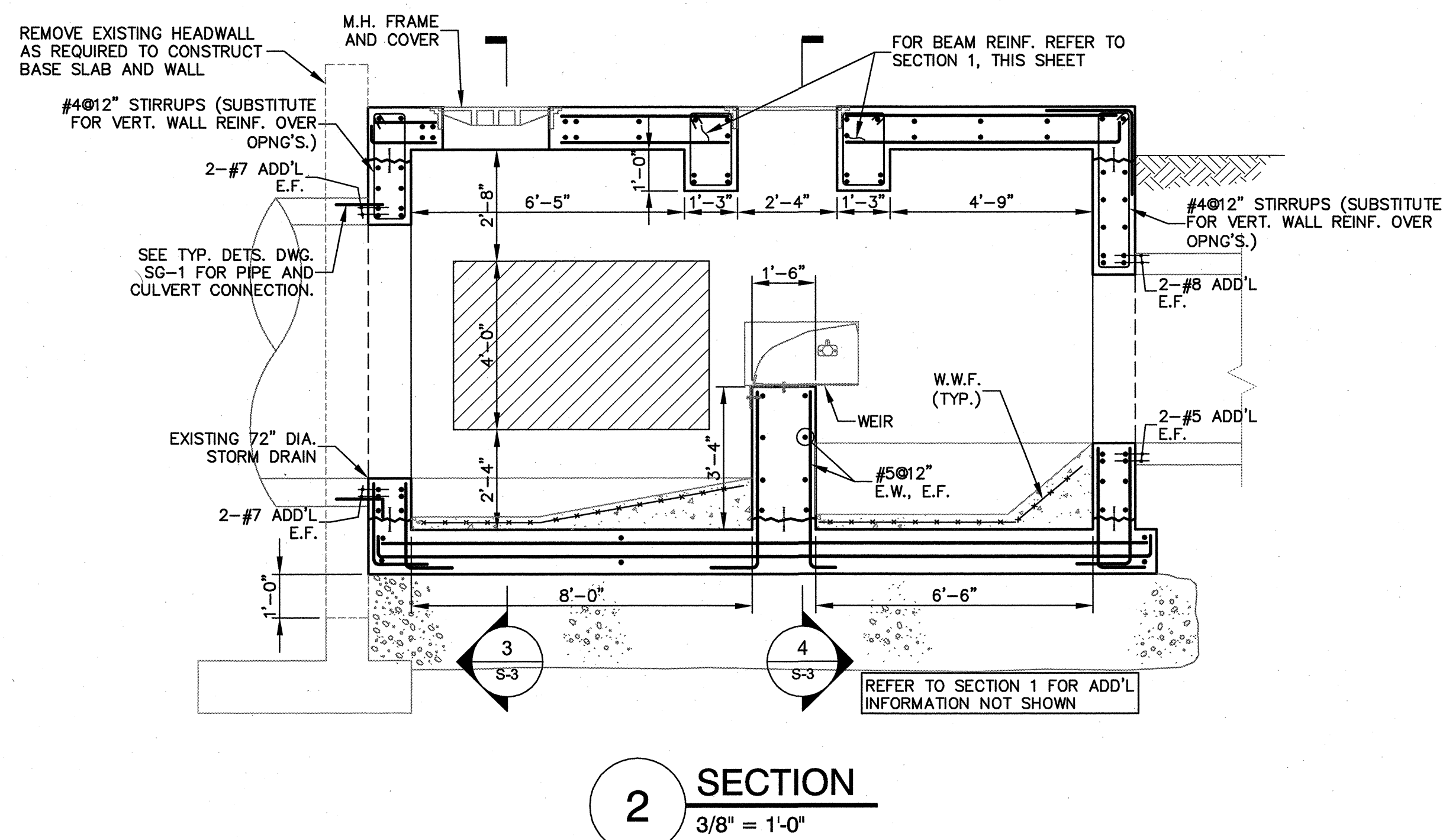
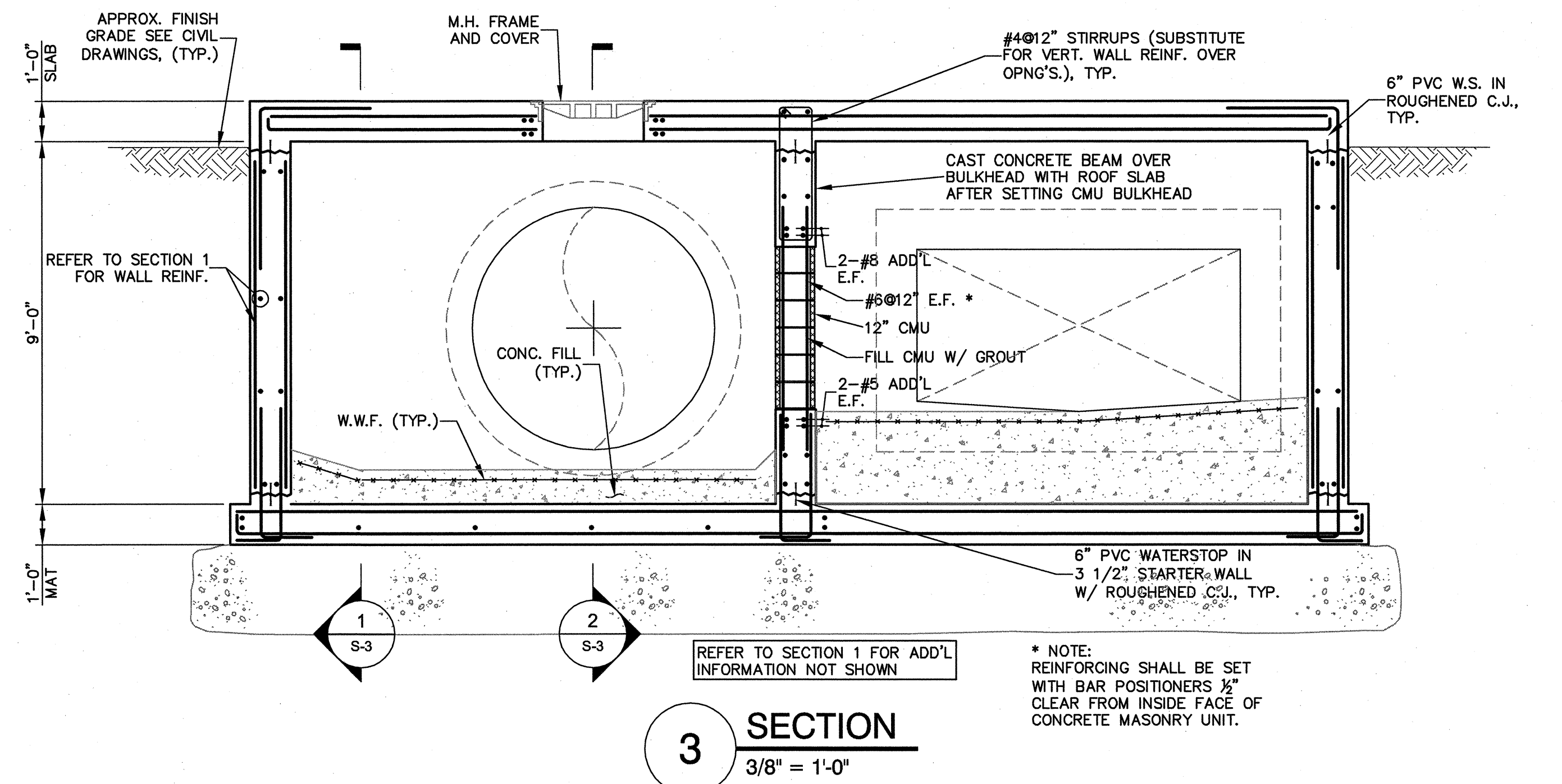
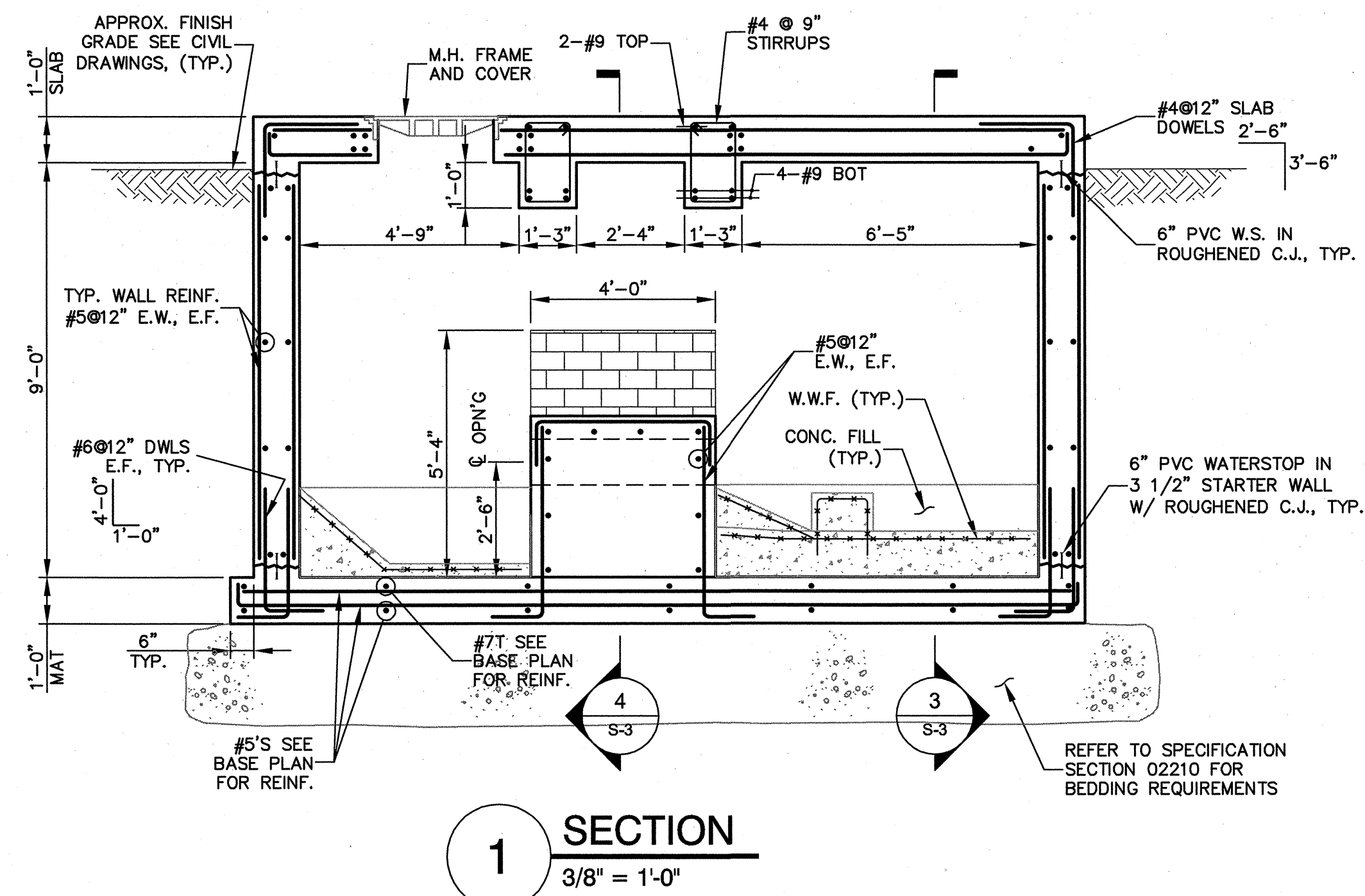


Scale	AS NOTED		
Date	SEPTEMBER 1, 2010		
Job No.	1998400.12		
Designed by	GPP		
Drawn by	MEG		
Checked by	DEP	No.	Description
Approved by	JBC		Date

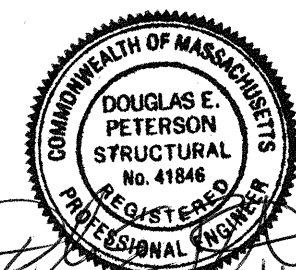


CITY OF CAMBRIDGE, MASSACHUSETTS
 CAMBRIDGEPARK DRIVE AREA DRAINAGE IMPROVEMENTS
 CONTRACT NO. 12
 WHEELER STREET BENDING WEIR STRUCTURE
 PLANS

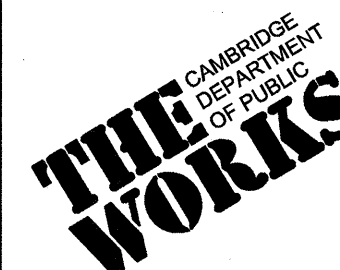
Sheet No. S-2
 File No.



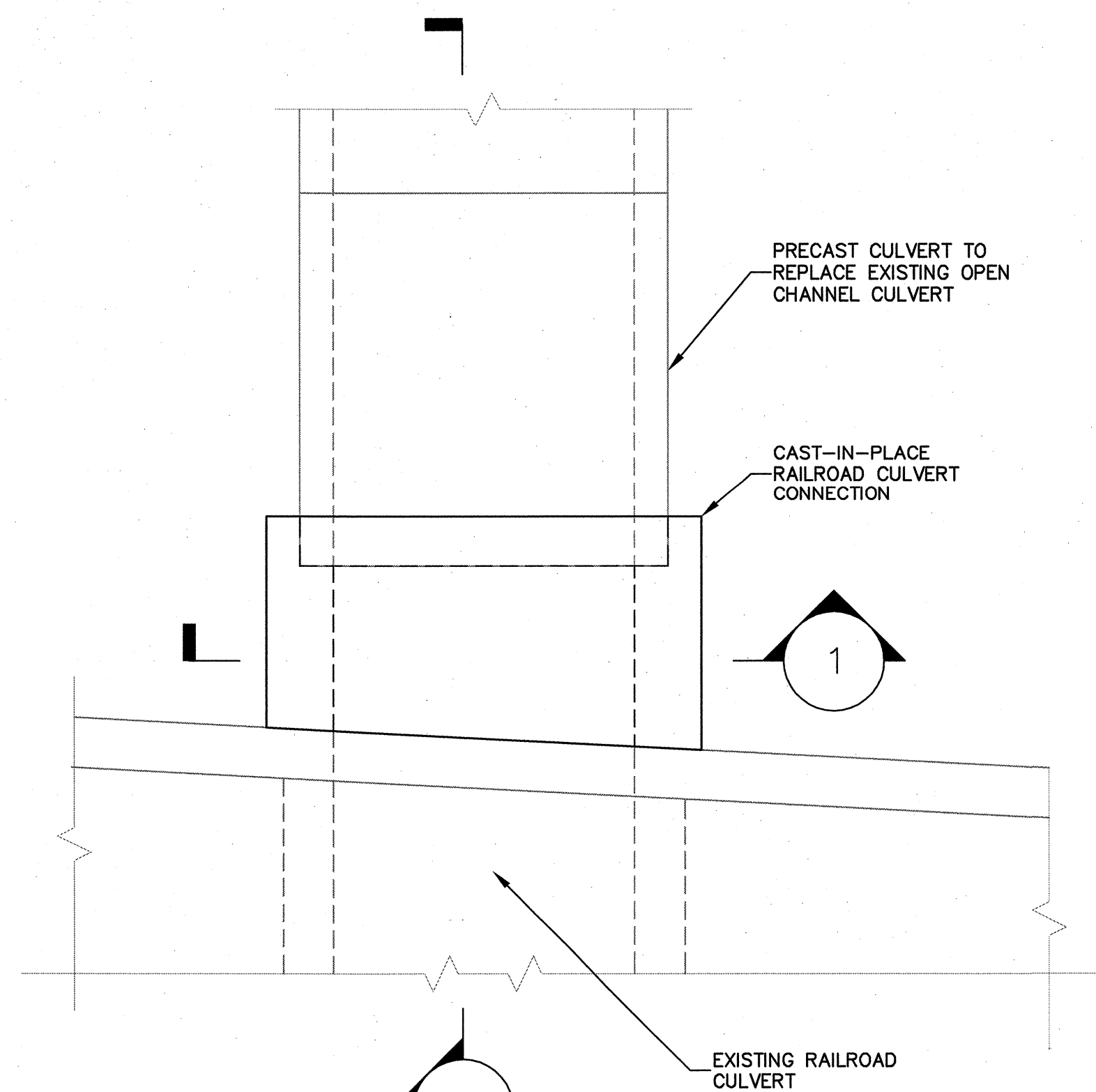
CONFORMED SET



Scale	AS NOTED		
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Approved by	JBC		Date
			REVISIONS



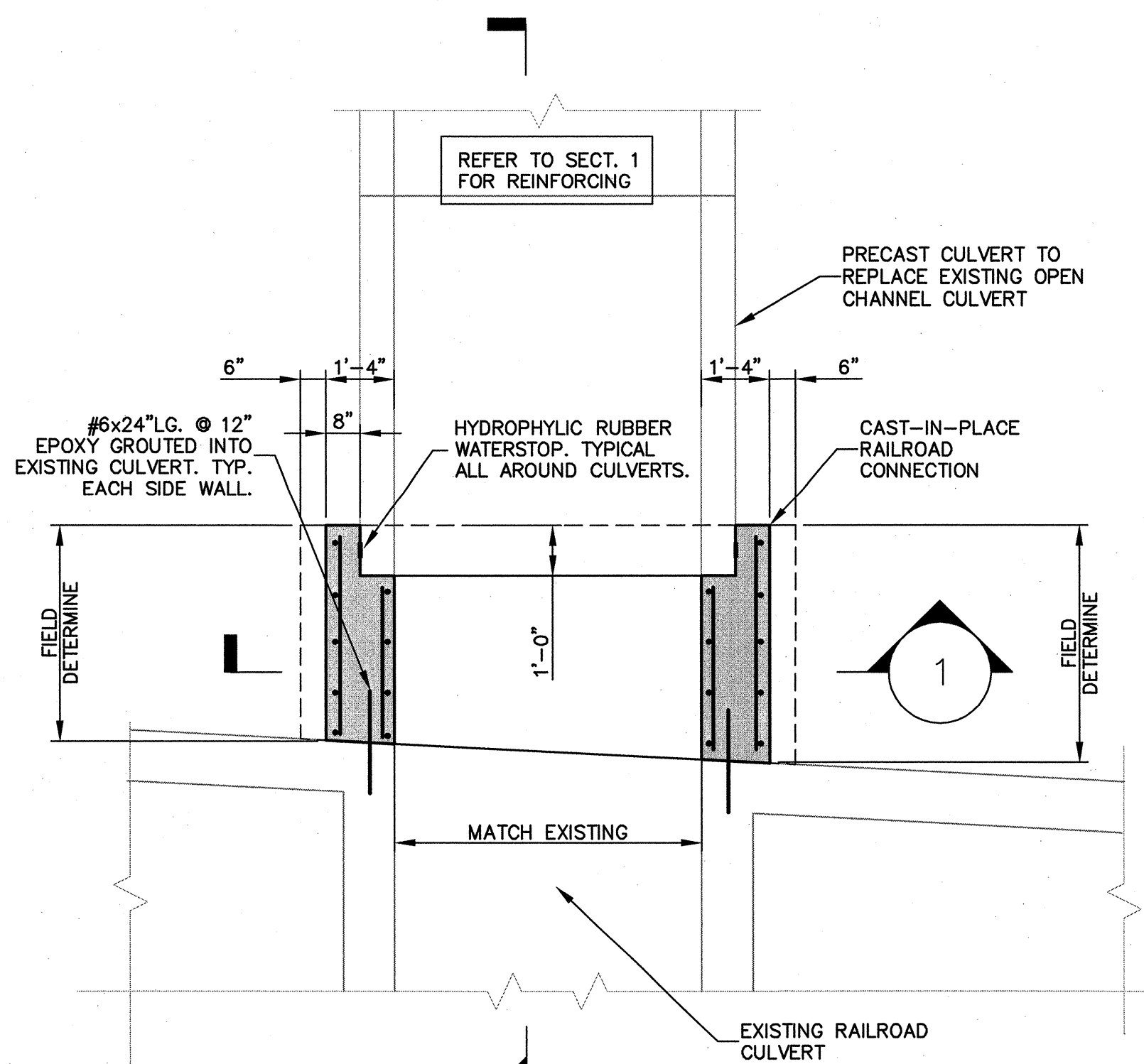
CITY OF CAMBRIDGE, MASSACHUSETTS	Sheet No.
CAMBRIDGE PARK DRIVE AREA DRAINAGE IMPROVEMENTS	S-3
CONTRACT NO. 12	File No.
WHEELER STREET BENDING WEIR STRUCTURE	
SECTIONS AND DETAILS	



TOP PLAN
3/8" = 1'-0"

NOTES:

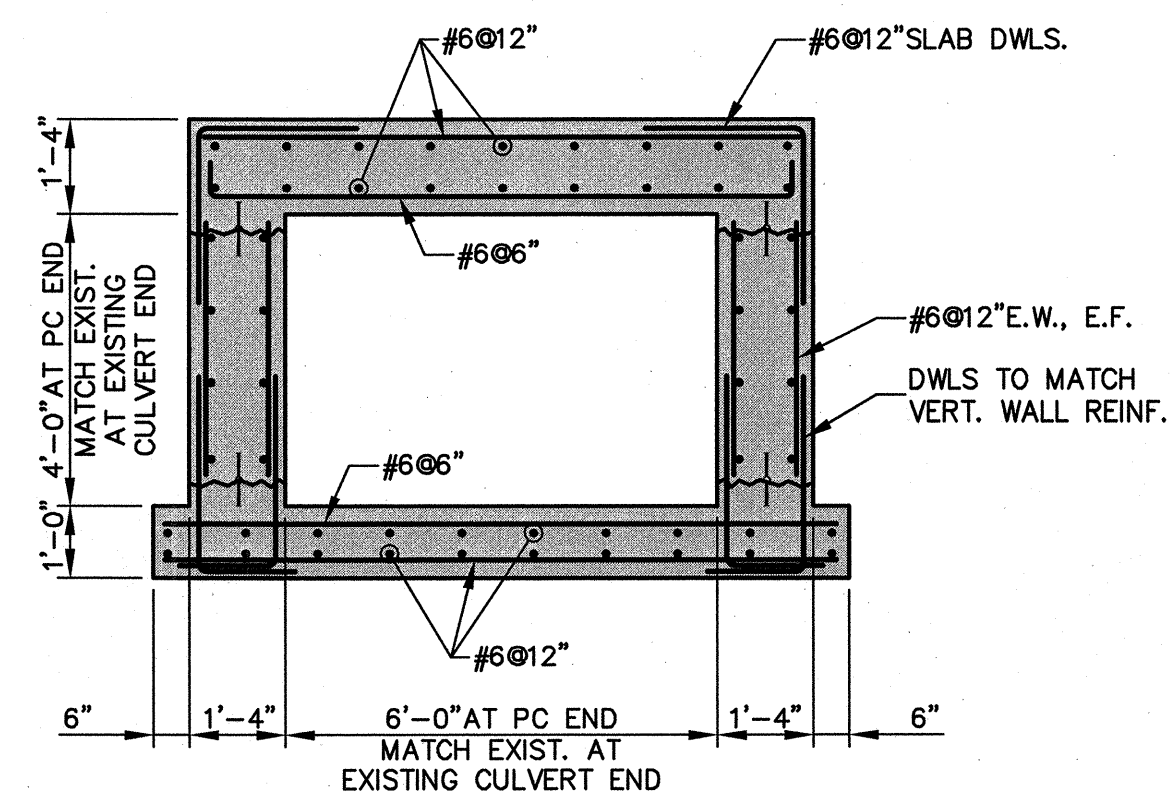
1. SLAB IS DESIGNED FOR AREMA COOPER E-80 LOADING.
2. VERIFY ALL DIMENSIONS BASED ON ACTUAL PIPE THICKNESSES AND EXISTING CONDITIONS.
3. COORDINATE WITH CIVIL DWG C-3 FOR ADDITIONAL INFORMATION, STATIONS AND ELEVATIONS.



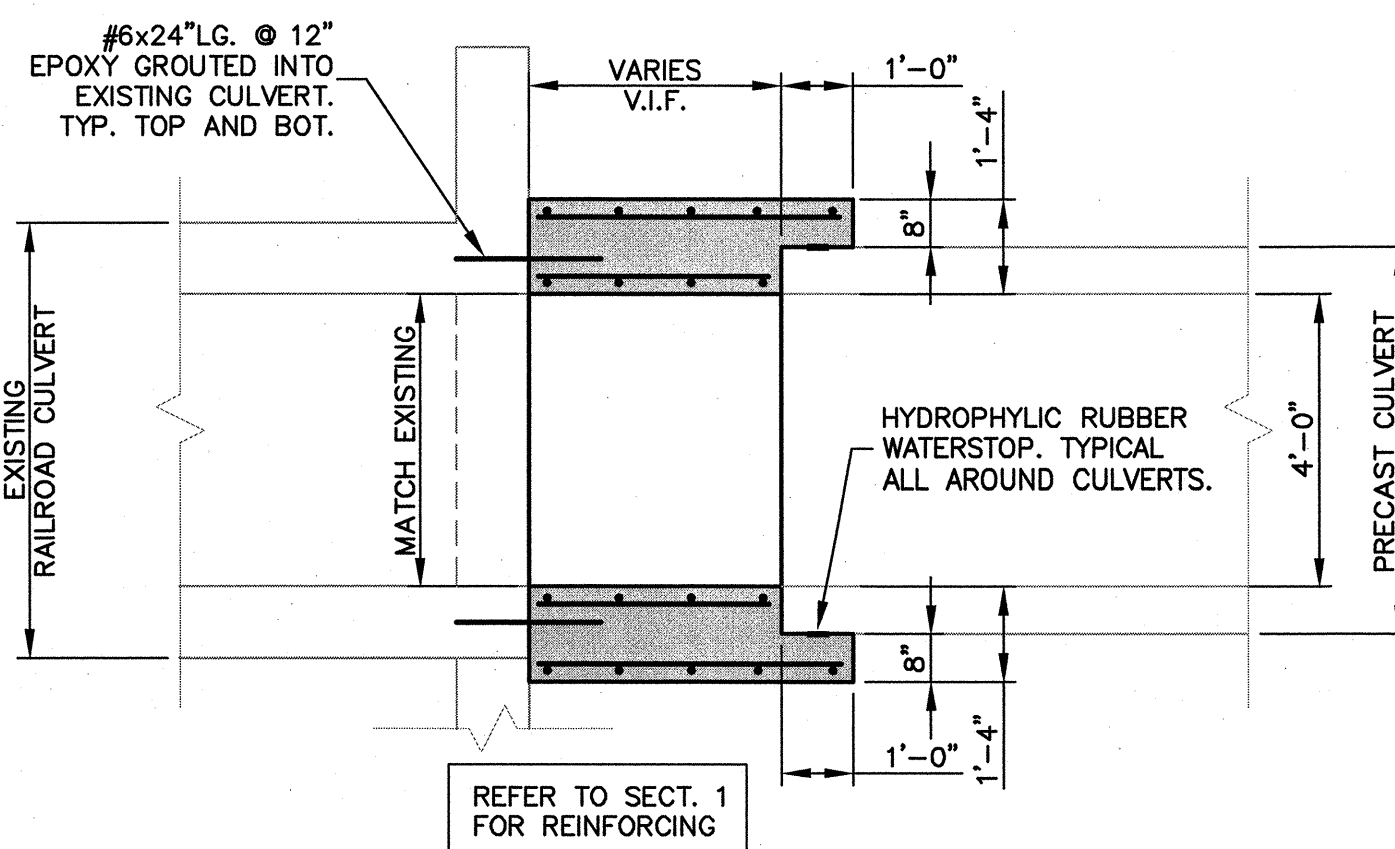
BOTTOM PLAN
3/8" = 1'-0"

NOTES:

1. THE CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE STRUCTURE FROM BUOYANCY DURING CONSTRUCTION.
2. SEE TYPICAL CONCRETE FILL REINFORCING DETAIL ON DWG SG-1.

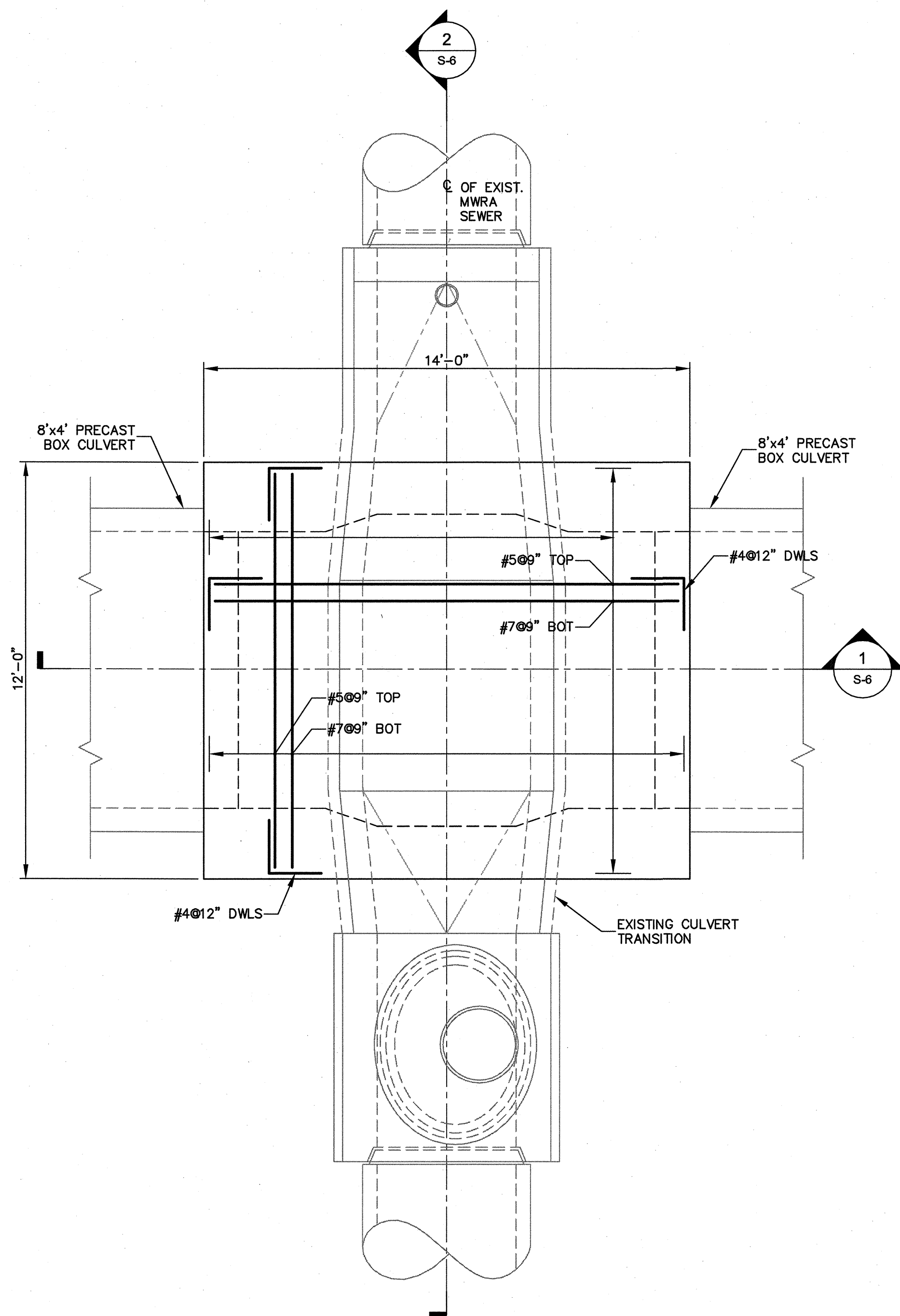


1 SECTION
3/8" = 1'-0"



2 SECTION
3/8" = 1'-0"

CONFORMED SET

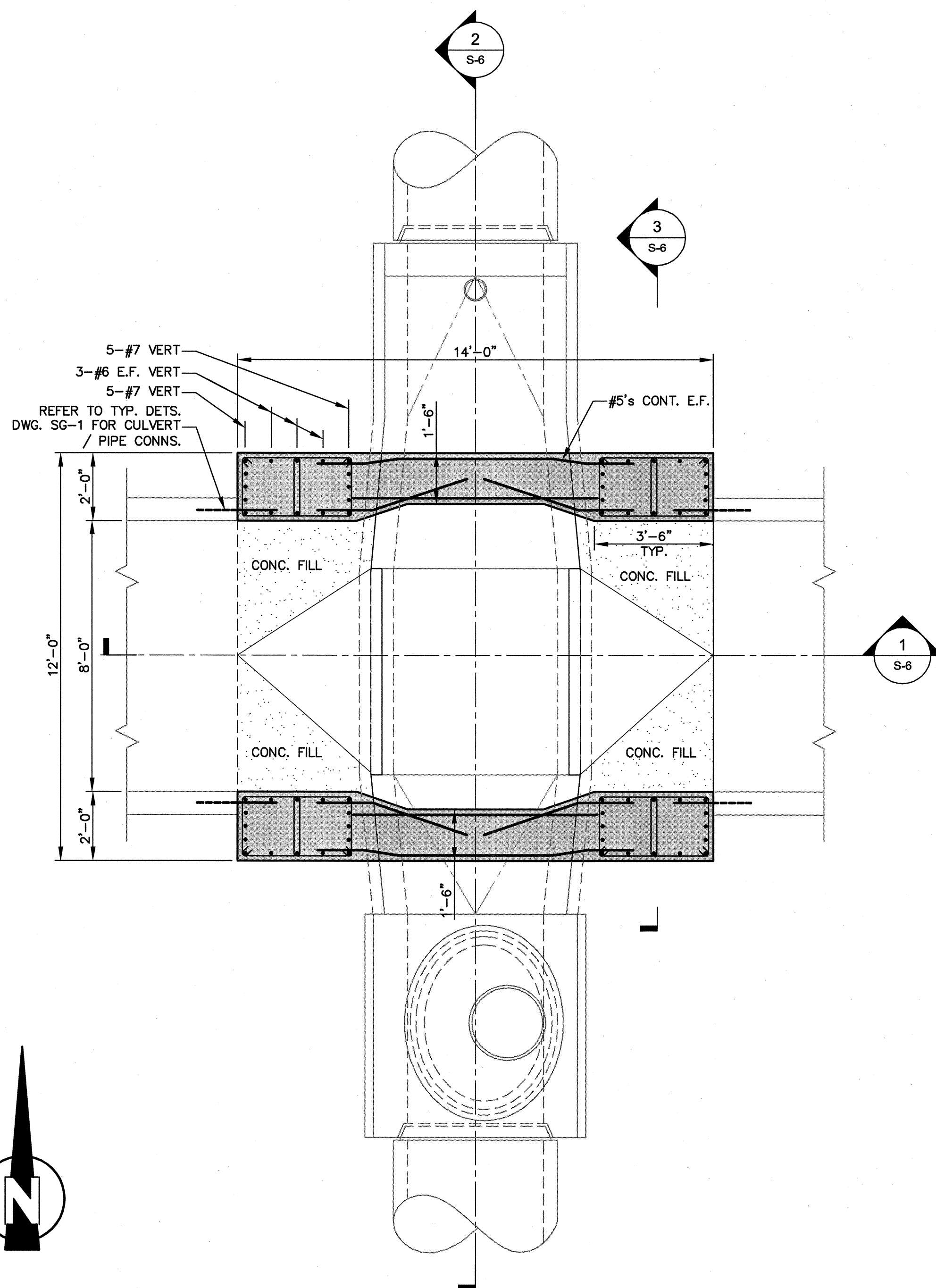


TOP PLAN

3/8" = 1'-0"

NOTES:

1. SLAB IS DESIGNED FOR AASHTO HS-20 LOADING.
2. VERIFY OVERALL DIMENSIONS BASED ON EXISTING CONDITIONS.
3. COORDINATE WITH CIVIL DWGS C-06 AND CG-19. FOR ADDITIONAL INFORMATION, STATIONS, & ELEVATIONS.



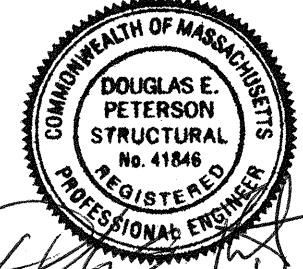
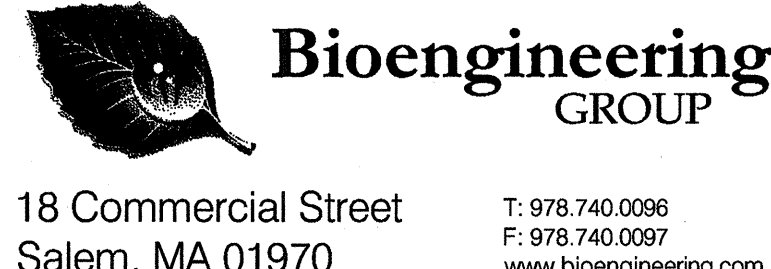
BOTTOM PLAN

3/8" = 1'-0"

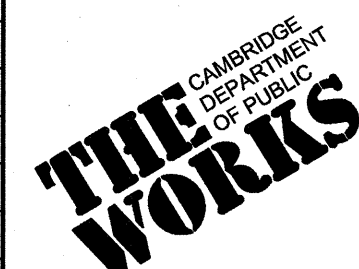
NOTES:

1. THE CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE STRUCTURE FROM BUOYANCY DURING CONSTRUCTION.
2. SEE STANDARD DETAIL, TYPICAL WELDED WIRE FABRIC FOR CONCRETE FILL ON DWG SG-1.
3. CONCRETE FILL SHALL BE CLASS "A" 3/8" PEASTONE MIX.

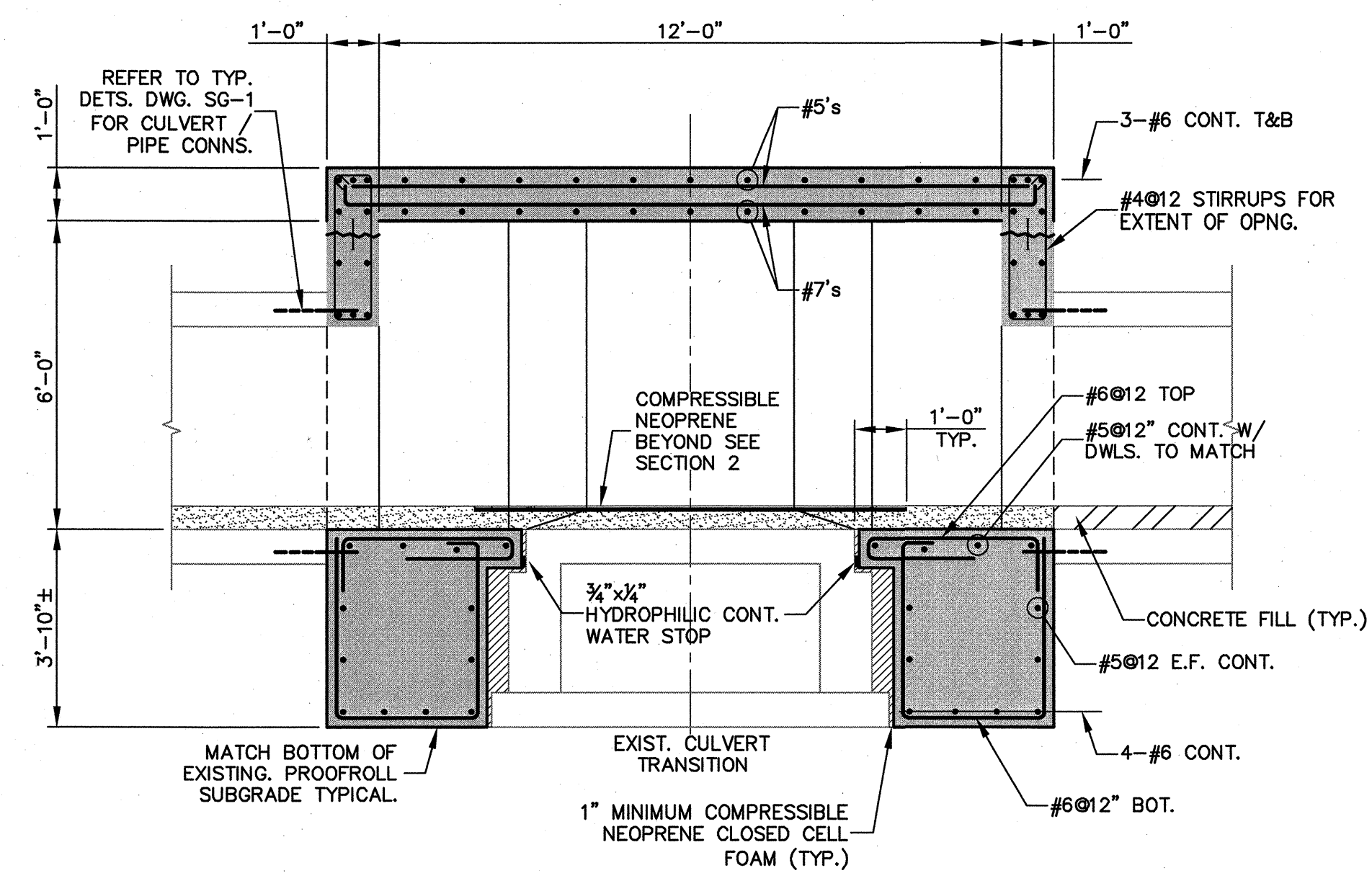
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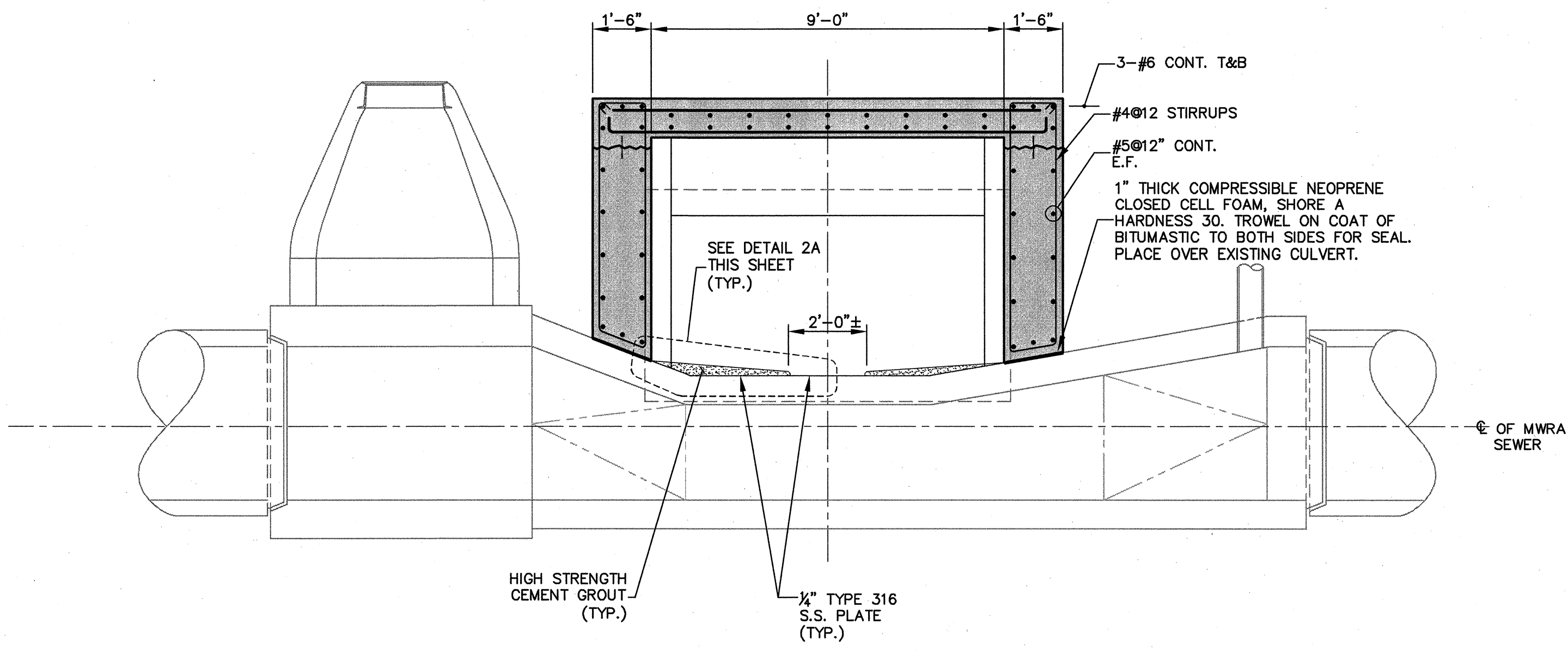
Scale	AS NOTED			
Date	SEPTEMBER 1, 2010			
Job No.	1998400.12			
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Checked by	JM	No.	Description	Date
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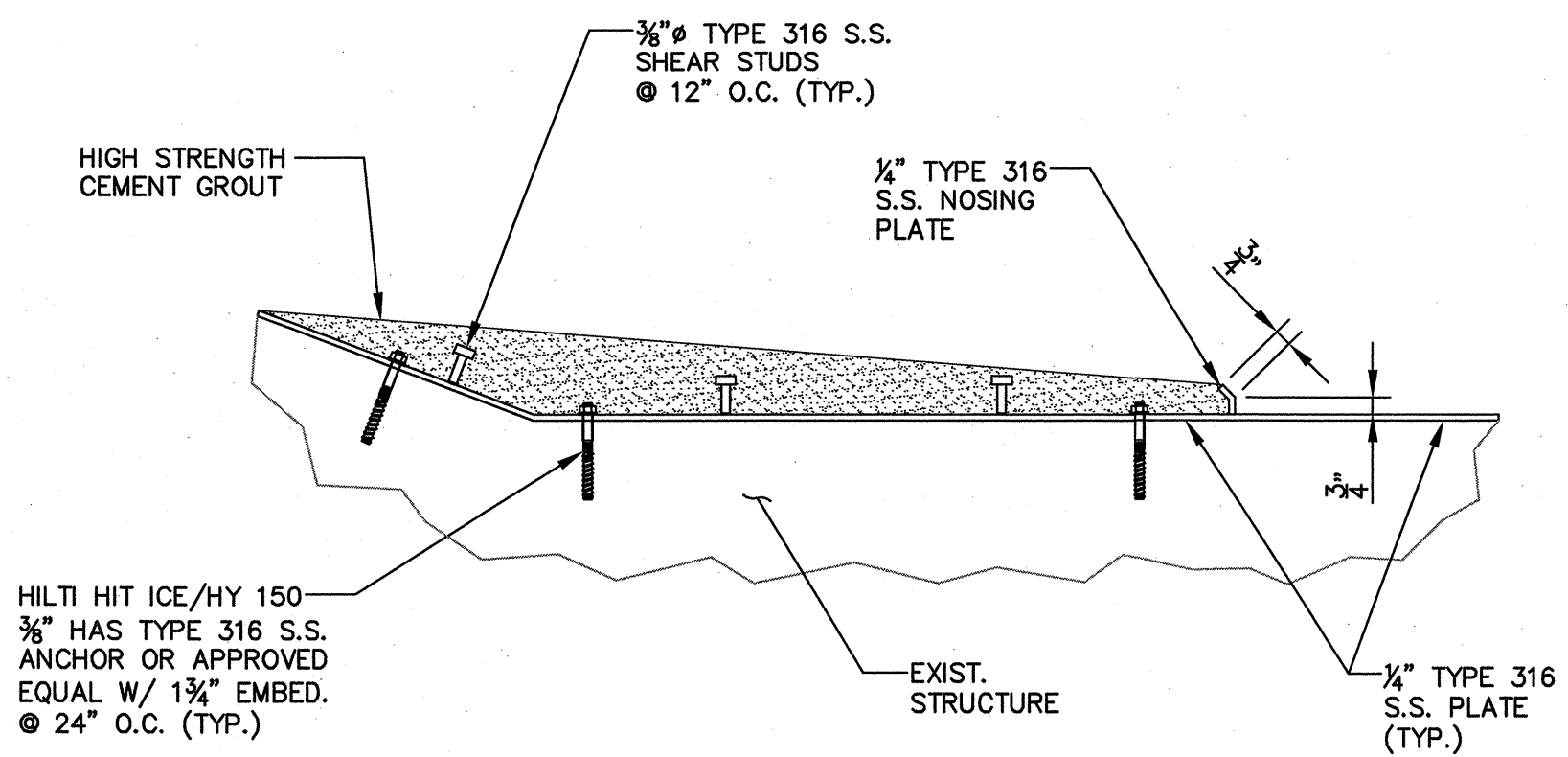
CITY OF CAMBRIDGE, MASSACHUSETTS	Sheet No.	S-5
CAMBRIDGE PARK DRIVE AREA DRAINAGE IMPROVEMENTS	File No.	
CONTRACT NO. 12		
MWRA CROSSING STRUCTURE NO. 2		
PLANS		



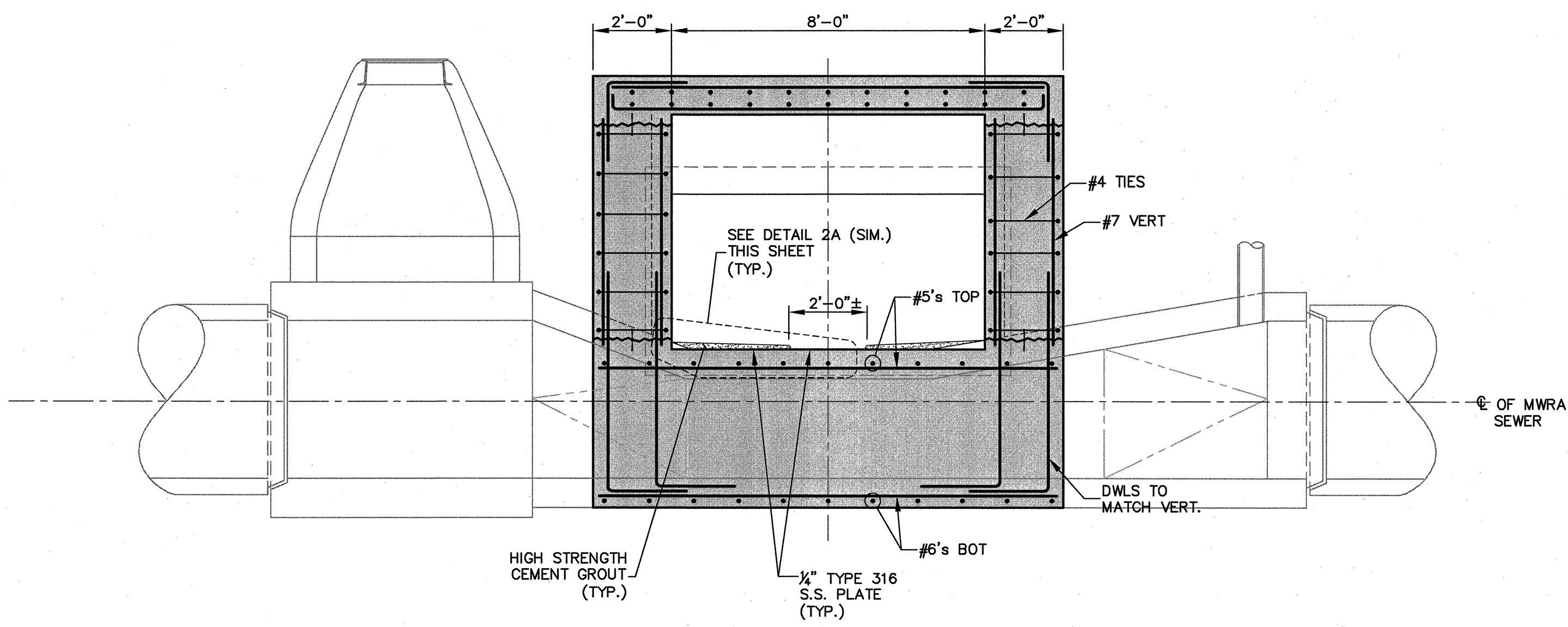
1 SECTION
3/8" = 1'-0"



2 SECTION
3/8" = 1'-0"



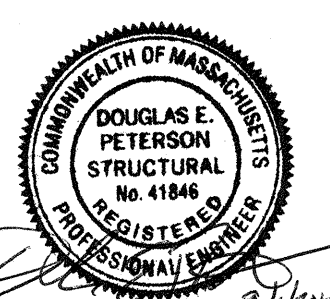
2A DETAIL
1 1/2" = 1'-0"



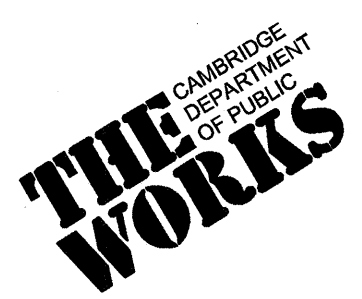
3 SECTION
3/8" = 1'-0"

- NOTES:
- HIGH STRENGTH CEMENT GROUT SHALL BE SIKAGROUT 212 AS MANUFACTURED BY SIKA CORPORATION OR APPROVED EQUAL. MINIMUM APPLICATION THICKNESS SHALL BE 1/2 INCH.
 - TOP SURFACE OF S.S. PLATE TO RECEIVE GROUT SHALL BE ROUGHENED AS RECOMMENDED BY GROUT MANUFACTURER.
 - SIKADUR 32 HI-MOD EPOXY BONDING ADHESIVE AS MANUFACTURED BY SIKA CORPORATION OR APPROVED EQUAL SHALL BE APPLIED TO ALL SURFACES TO RECEIVE GROUT.
 - SIKAGARD 701W SEALER AS MANUFACTURED BY SIKA CORPORATION OR APPROVED EQUAL SHALL BE APPLIED TO ALL GROUTED SURFACES AFTER GROUT HAS BEEN CURED PER MANUFACTURERS SPECIFICATIONS.
 - STAINLESS STEEL PLATE SHALL BE IN CONFORMANCE WITH ASTM A240 AND SHALL HAVE A MINIMUM YIELD STRENGTH OF 30 KSI.
 - STAINLESS STEEL WELDED STUDS SHALL BE TYPE 316L IN CONFORMANCE WITH ASTM A276. WELDING SHALL BE IN CONFORMANCE WITH AWS D1.6.

CONFORMED SET

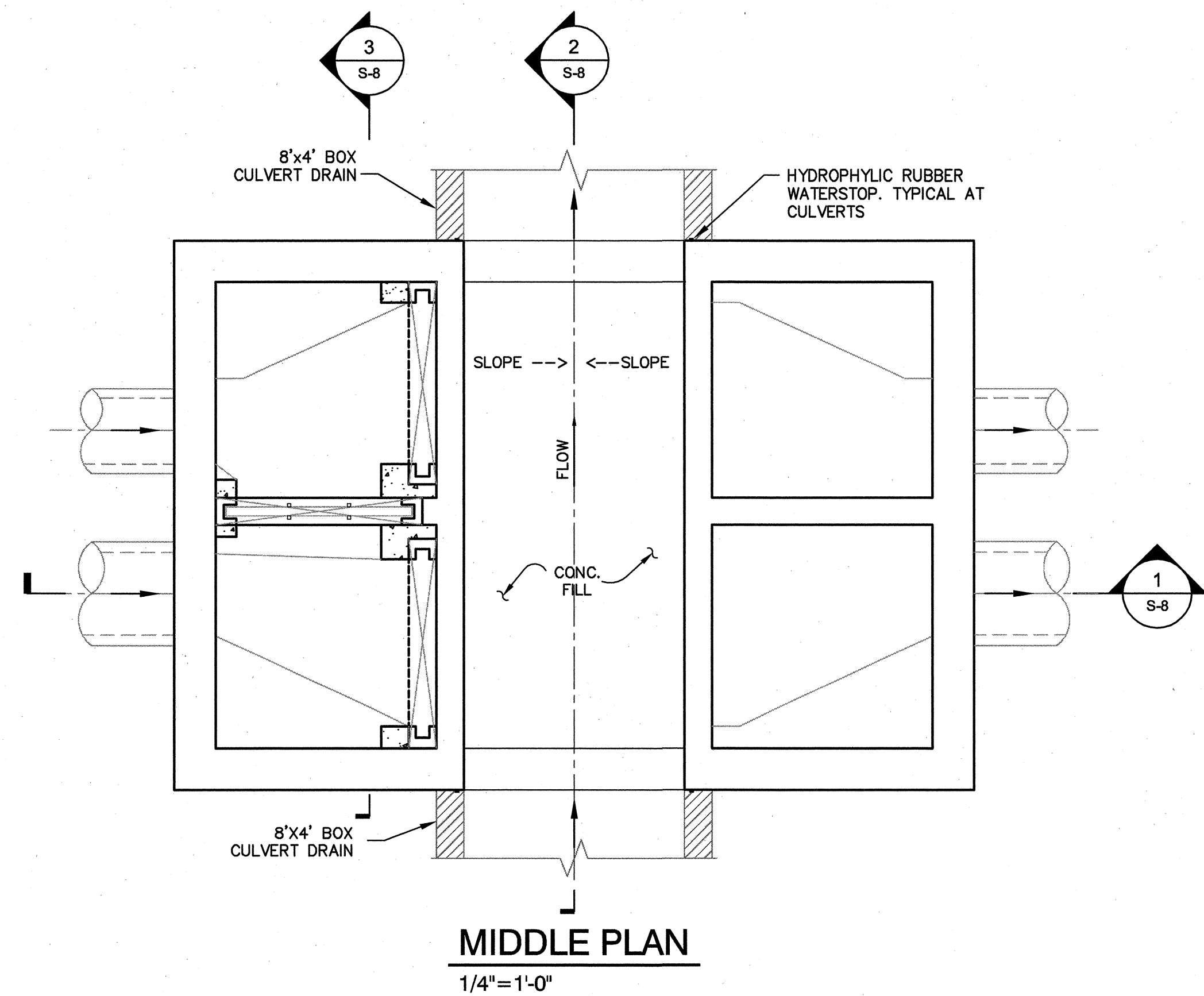


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Checked by	JM	No.	Description	Date
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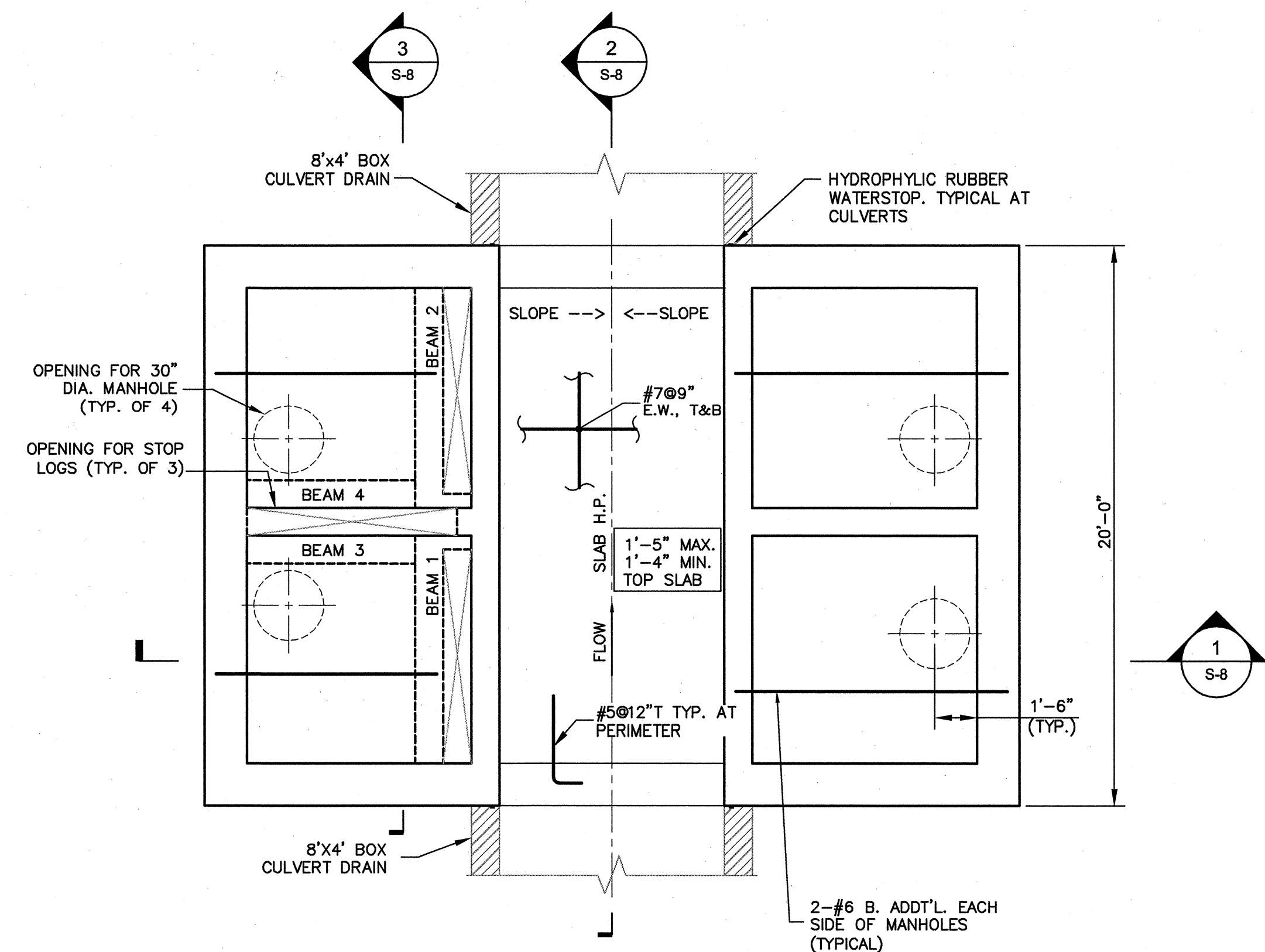


CITY OF CAMBRIDGE, MASSACHUSETTS
CAMBRIDGEPARK DRIVE AREA DRAINAGE IMPROVEMENTS
CONTRACT NO. 12
MWRA CROSSING STRUCTURE NO. 2
SECTIONS

Sheet No. S-6
File No.

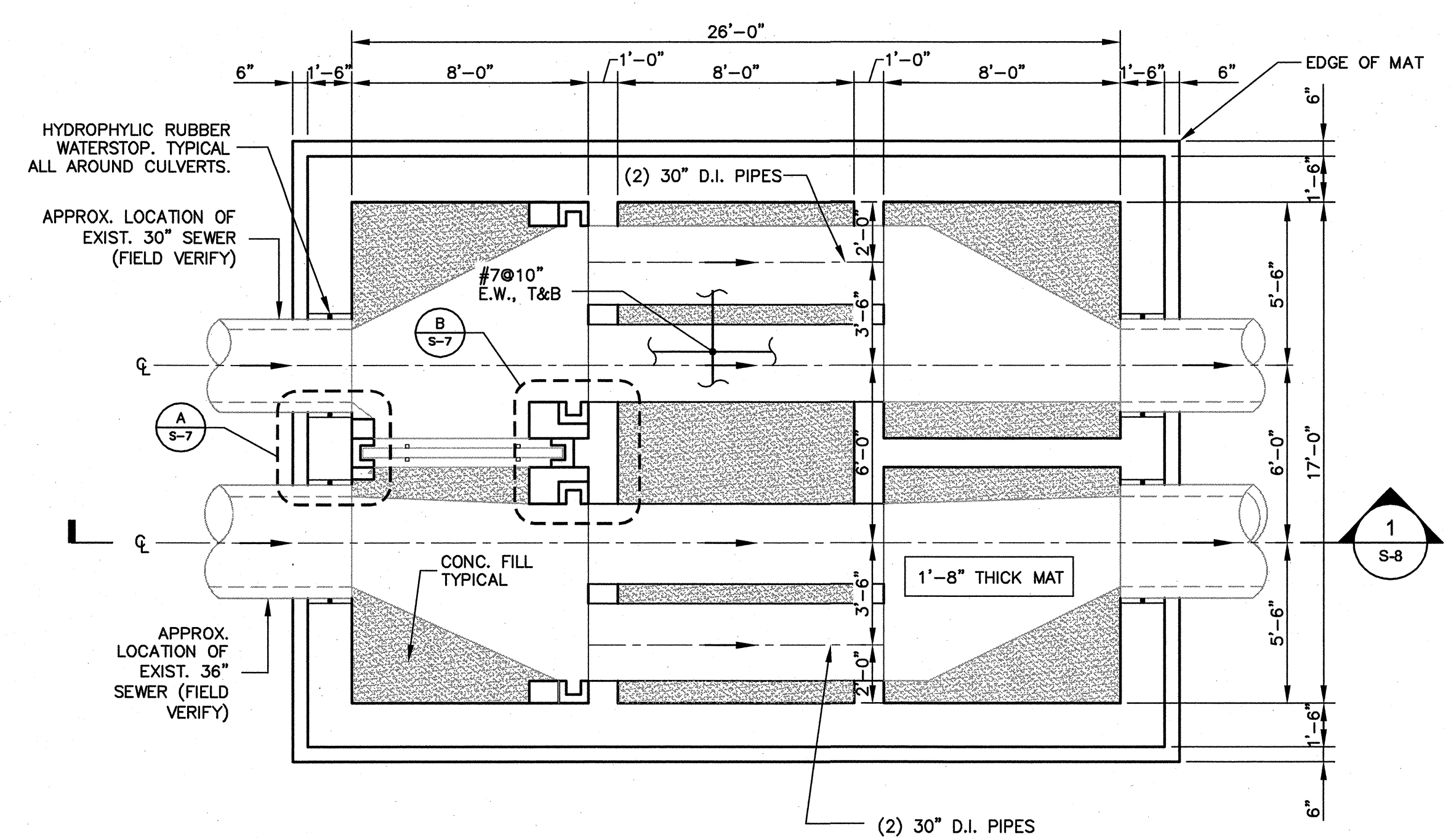


MIDDLE PLAN
1/4" = 1'-0"



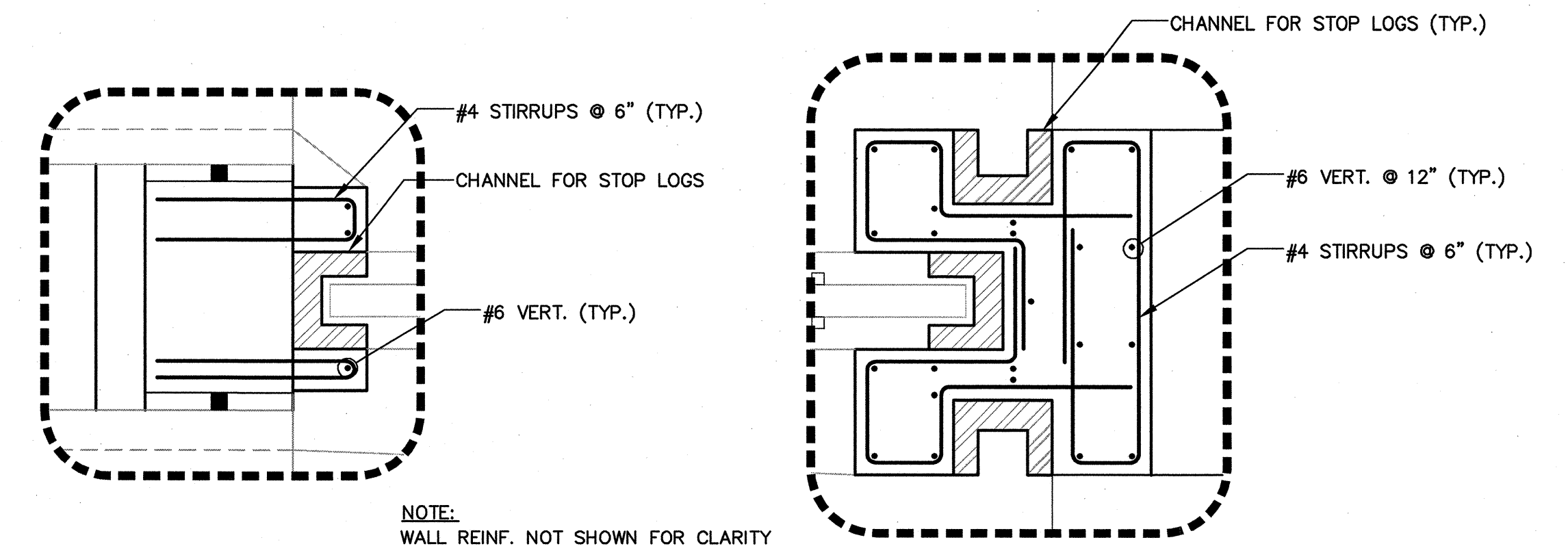
TOP PLAN
1/4" = 1'-0"

- NOTES:**
1. SLAB IS DESIGNED FOR AASHTO HS-20 LOADING.
 2. VERIFY OVERALL DIMENSIONS BASED ON EXISTING CONDITIONS.
 3. COORDINATE WITH CIVIL DWGS. FOR ADDITIONAL INFORMATION, STATIONS, & ELEVATIONS. SEE DWGS C-10 AND GC-13.



BOTTOM PLAN
1/4" = 1'-0"

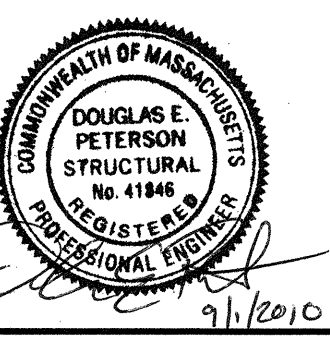
- NOTES:**
1. THE CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE STRUCTURE FROM BUOYANCY DURING CONSTRUCTION.
 2. SEE STANDARD DETAIL, TYPICAL WELDED WIRE FABRIC FOR CONCRETE FILL ON DWG SG-1.
 3. CONCRETE FILL SHALL BE CLASS "A" 3/8" PEASTONE MIX.



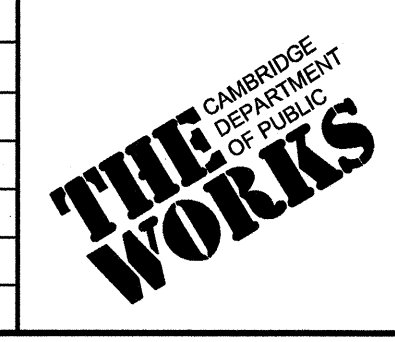
A DETAIL
3/4" = 1'-0"

B DETAIL
3/4" = 1'-0"

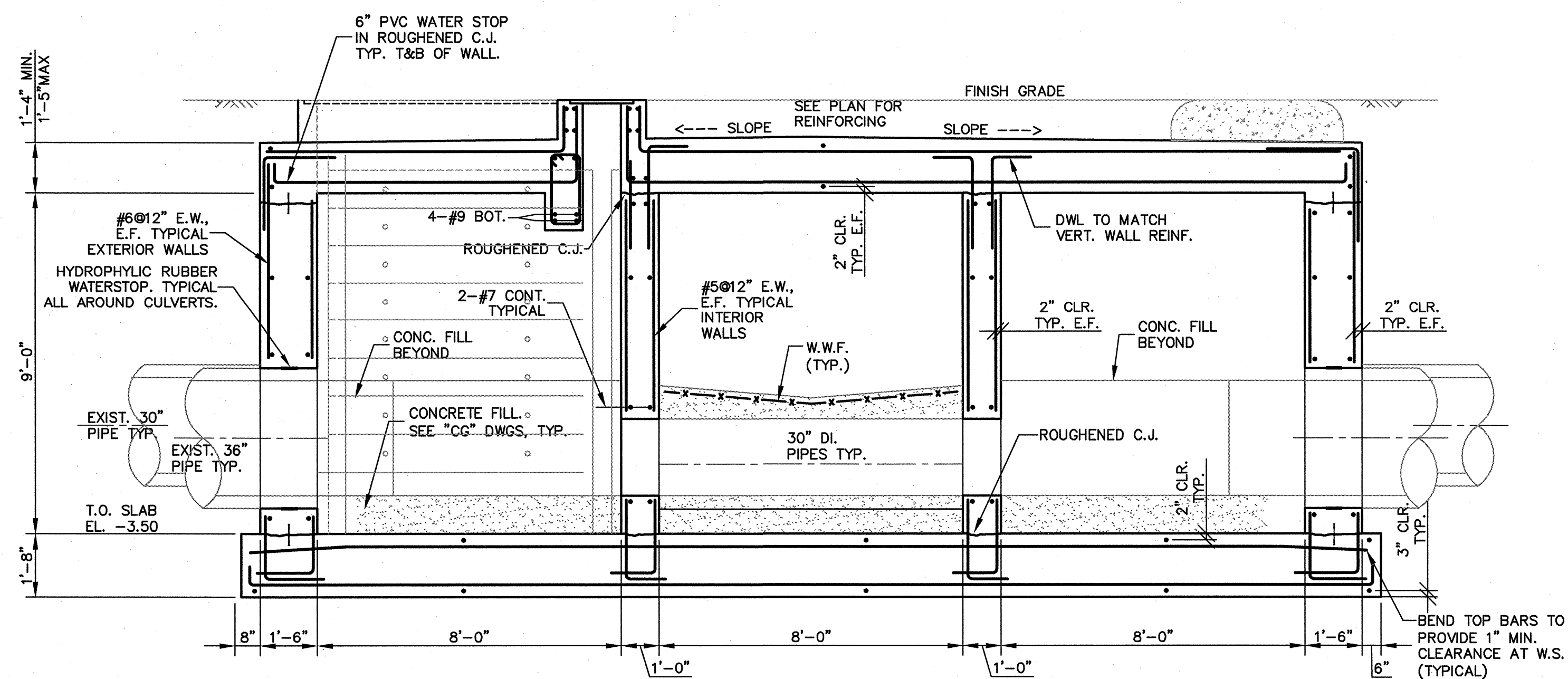
CONFORMED SET



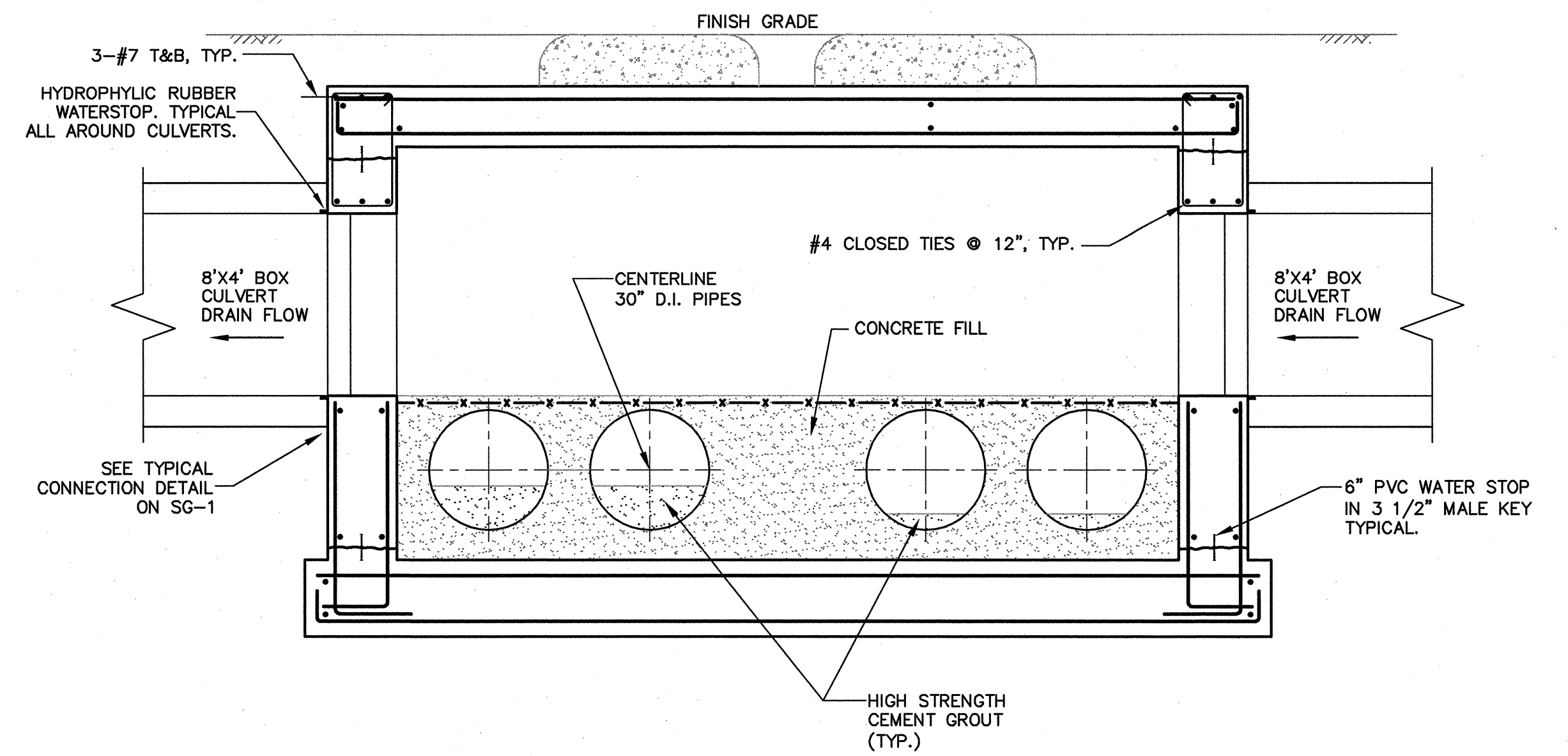
Scale	AS NOTED			
Date	SEPTEMBER 1, 2010			
Job No.	1998400.12			
Designed by	JM			
Drawn by	FJM			
Checked by	JFM	No.	Description	Date
Approved by	JBC		REVISIONS	



CITY OF CAMBRIDGE, MASSACHUSETTS	Sheet No.
CAMBRIDGEPARK DRIVE AREA DRAINAGE IMPROVEMENTS CONTRACT NO. 12	S-7
MWRA BELMONT CROSSING STRUCTURE NO. 3	File No.
PLANS & SECTIONS	

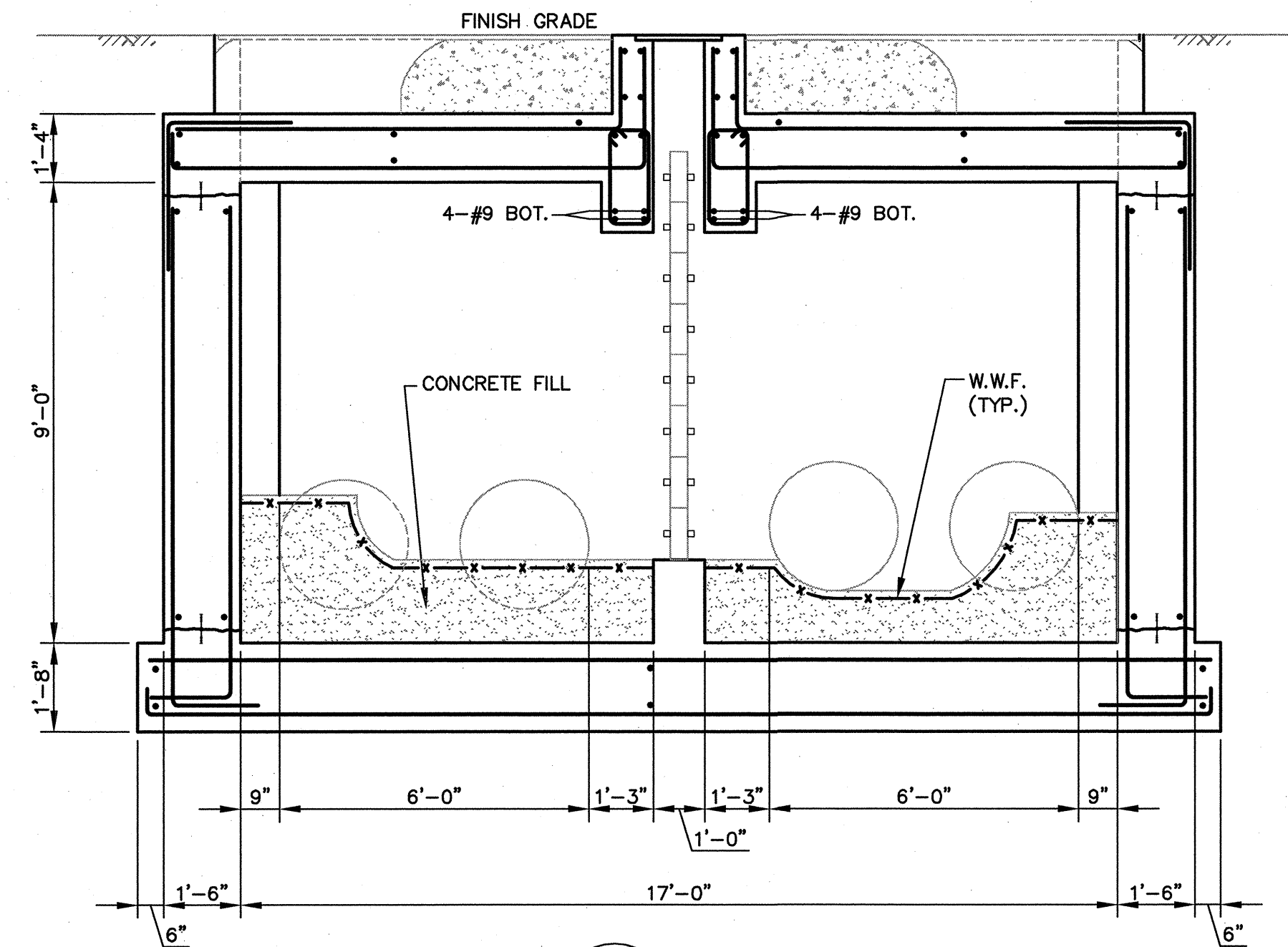


1 SECTION
3/8" = 1'-0"



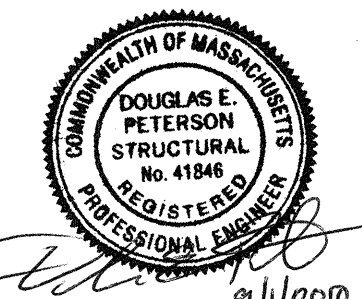
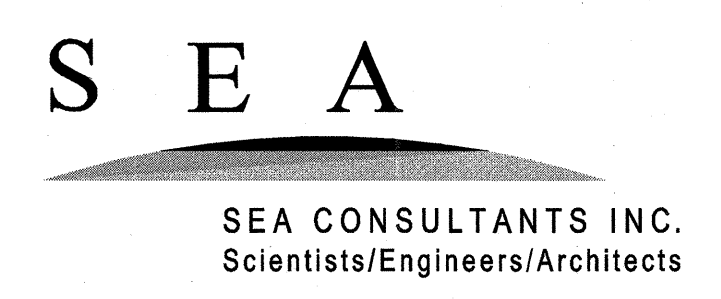
2 SECTION
3/8" = 1'-0"

- NOTES:
1. HIGH STRENGTH CEMENT GROUT SHALL BE SIKAGROUT 212 AS MANUFACTURED BY SIKA CORPORATION OR APPROVED EQUAL. MINIMUM APPLICATION THICKNESS SHALL BE 1/2 INCH.
 2. INSIDE SURFACE OF D.I. PIPE TO RECEIVE GROUT SHALL BE ROUGHENED AS RECOMMENDED BY GROUT MANUFACTURER.
 3. SIKADUR 32 HI-MOD EPOXY BONDING ADHESIVE AS MANUFACTURED BY SIKA CORPORATION OR APPROVED EQUAL SHALL BE APPLIED TO ALL SURFACES TO RECEIVE GROUT.
 4. SIKAGARD 701W SEALER AS MANUFACTURED BY SIKA CORPORATION OR APPROVED EQUAL SHALL BE APPLIED TO ALL GROUTED SURFACES AFTER GROUT HAS BEEN CURED PER MANUFACTURERS SPECIFICATIONS.

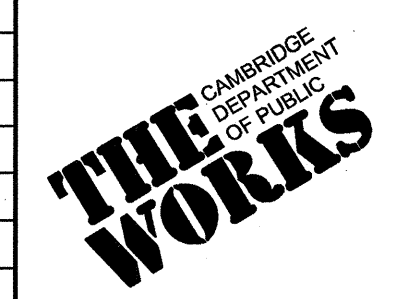


3 SECTION
3/8" = 1'-0"

CONFORMED SET



Scale	N.T.S.			
Date	SEPTEMBER 1, 2010			
Job No.	1998400.12			
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Drawn by	FJM			
Checked by	JM	No.	Description	Date
Approved by	JBC		REVISIONS	



CITY OF CAMBRIDGE, MASSACHUSETTS
CAMBRIDGEPARK DRIVE AREA DRAINAGE IMPROVEMENTS
CONTRACT NO. 12
MWRA BELMONT CROSSING STRUCTURE NO. 3
SECTIONS

Sheet No.	S-8
File No.	

STRUCTURAL NOTES

GENERAL

1. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING, COORDINATING AND VERIFYING ALL EXISTING CONDITIONS AND DIMENSIONS ON THESE DRAWINGS.
2. STRUCTURAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS STATE BUILDING CODE, 7TH EDITION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN IN THE COURSE OF CONSTRUCTION CONDITIONS ARE UNCOVERED WHICH ARE UNANTICIPATED OR OTHERWISE APPEAR TO PRESENT A DANGEROUS CONDITION.
4. DETAILS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO THOSE SHOWN FOR THE MOST SIMILAR CONDITION AS DETERMINED BY THE ENGINEER.

DESIGN CRITERIA

1. SPECIFICATIONS: "THE MASSACHUSETTS STATE BUILDING CODE", 7TH EDITION.

SEISMIC: IN ACCORDANCE WITH CODE
 WIND: REFERENCE PRESSURE = 14 PSF (EXPOSURE "A")
 LIVE LOAD: 85 POUNDS PER SQUARE FOOT
 FOUNDATION: THE FOUNDATIONS HAVE BEEN DESIGNED FOR AN ALLOWABLE SOIL BEARING PRESSURE OF 1 KIP PER SQUARE FOOT (KSF).

FOUNDATIONS

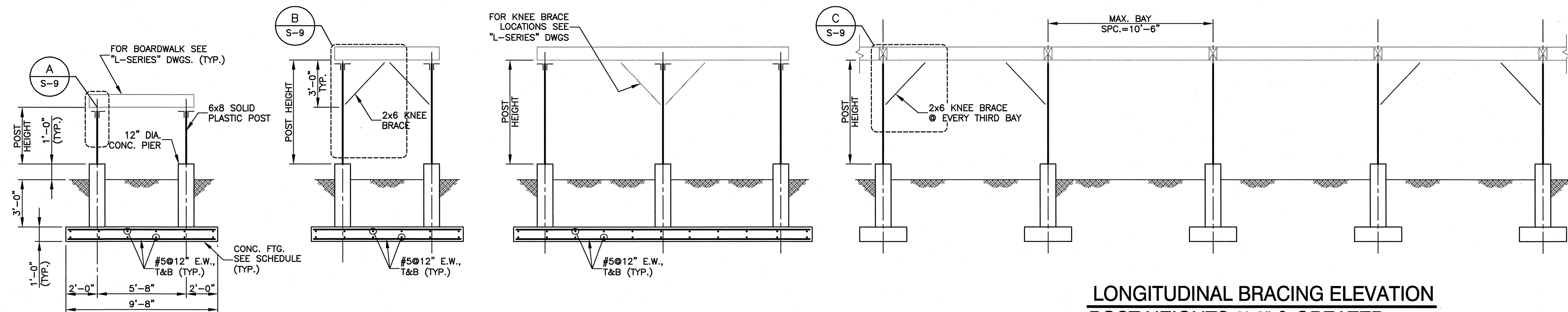
1. FOUNDATIONS SHALL BE PLACED TO THE DEPTH INDICATED ON THIS SHEET.
2. REINFORCING STEEL SHALL BE HELD IN POSITION BEFORE PLACEMENT OF THE CONCRETE FOUNDATION.

TIMBER

1. TIMBER HAS BEEN DESIGNED IN ACCORDANCE WITH THE NATIONAL DESIGN STANDARDS (NDS).
2. TIMBER SHALL BE VISUALLY GRADED IN CONFORMANCE WITH: SPIB.
3. ALL WOOD SHALL BE PRESSURE TREATED IN ACCORDANCE WITH THE SPECIFICATIONS.
4. STRUCTURAL LUMBER SHALL BE SOUTHERN PINE NO. 2 OR BETTER.
5. TIMBER DIMENSIONS INDICATED ON THE PLANS ARE NOMINAL.
6. CONNECTORS FOR COLUMN BASES AND JOIST HANGERS INDICATED ON THE PLANS ARE "SIMPSON STRONG-TIE" CONNECTORS, OTHER CONNECTORS MAY BE SUBMITTED, BUT MUST HAVE LISTED LOAD CAPACITIES EQUAL OR GREATER THAN THE EQUIVALENT "SIMPSON STRONG-TIE" CONNECTOR.
7. ALL HARDWARE INCLUDING STEEL ANGLES, PLATE, SCREWS, NAILS, BOLTS, WASHERS, NUTS, AND TIMBER CONNECTORS ARE TO BE GALVANIZED IN ACCORDANCE WITH ASTM A 194 FOR HARDWARE; AND ASTM A 653, G60 FOR SHEET STEEL.
8. GRADE STAMP: PROVIDE LUMBER WITH EACH PIECE FACTORY MARKED WITH GRADE STAMP OF INSPECTION AGENCY GRADING RULE REQUIREMENTS, GRADE, SPECIES, AND MOISTURE CONTENT.
9. TIMBER SHALL BE CUT TRUE WITH SQUARE ENDS; CUT ENDS SHALL BE FIELD TREATED WITH WOOD PRESERVATIVES.

POLYMER REINFORCED PLASTIC

1. POLYMER REINFORCED PLASTIC POSTS SHALL BE REINFORCED FORMED POLYOLEFIN RESIN FROM RECYCLED PRODUCTS. THE FINISHED PRODUCT SHALL HAVE THE FOLLOWING PROPERTIES. SPECIFY GRAVITY 0.75 MODULUS RUPTURE 2960 PSI MODULUS OF ELASTICITY 0.42 MILLION PSI COMPRESSION PARALLEL TO GRAIN 1740 PSI



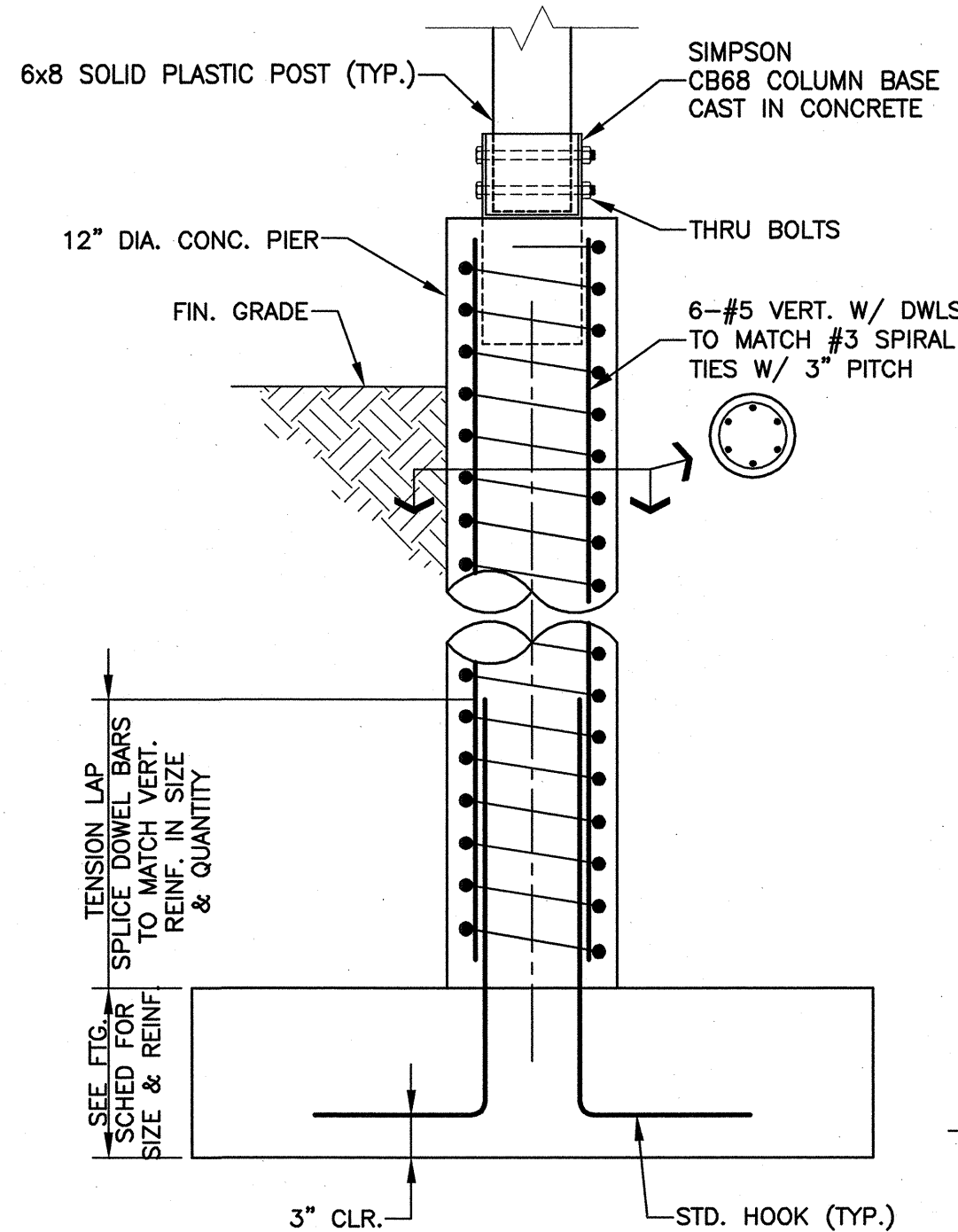
LONGITUDINAL BRACING ELEVATION POST HEIGHTS 3'-6" & GREATER

1/4" = 1'-0"

**TRANSVERSE ELEVATION
POST HEIGHT
LESS THAN 3'-6"**
1/4" = 1'-0"

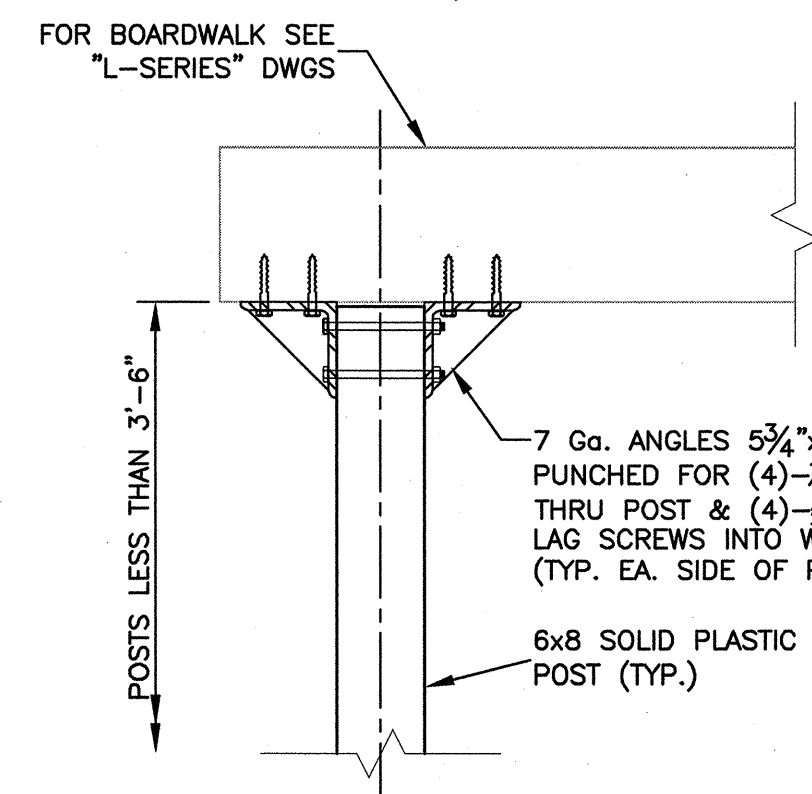
**TRANSVERSE ELEVATION
POST HEIGHT
GREATER THAN 3'-6"**
1/4" = 1'-0"

**TRANSVERSE ELEVATION
POST HEIGHT
GREATER THAN 3'-6" (W/ 2 BAYS)**
1/4" = 1'-0"

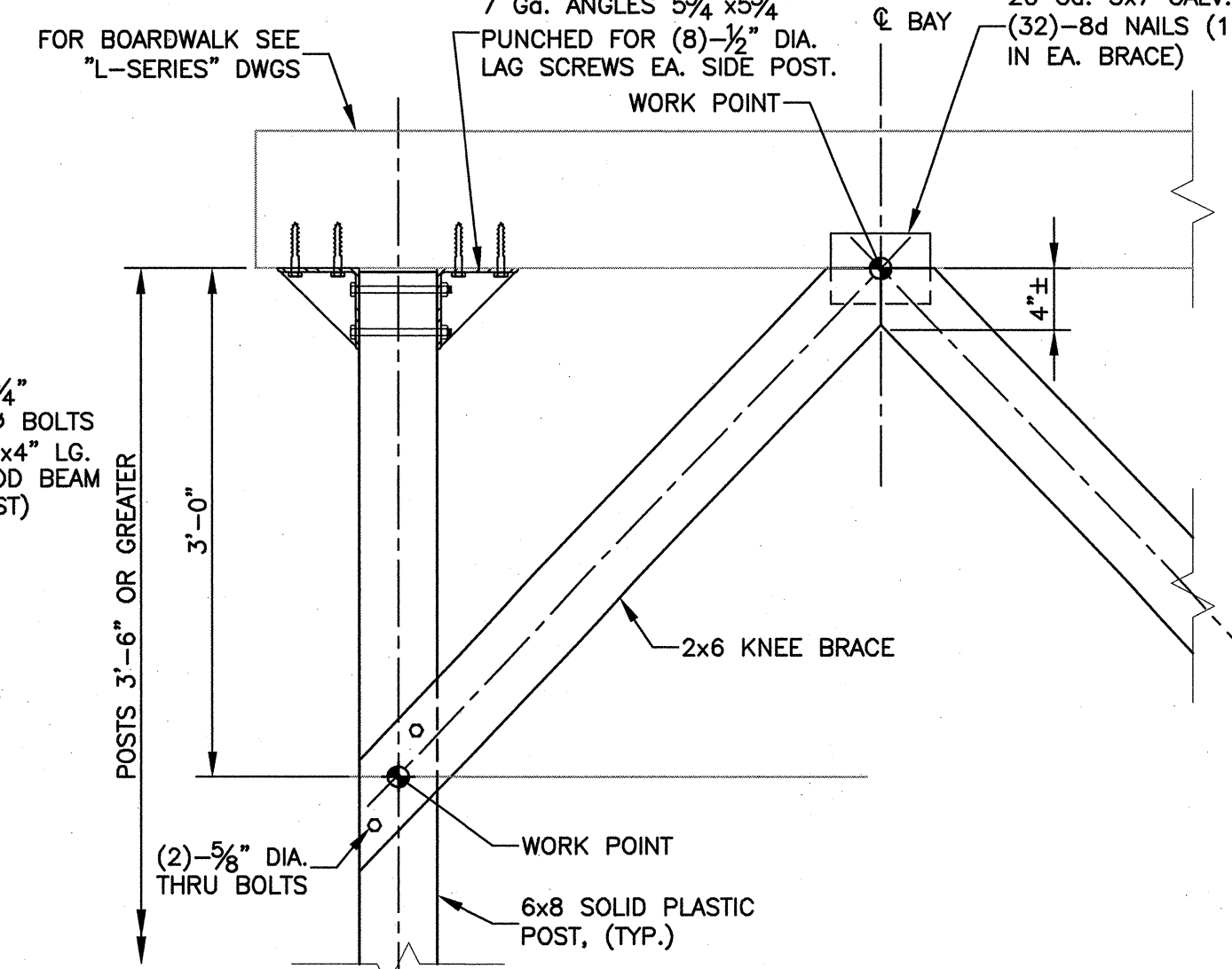


TYPICAL PIER SECTION

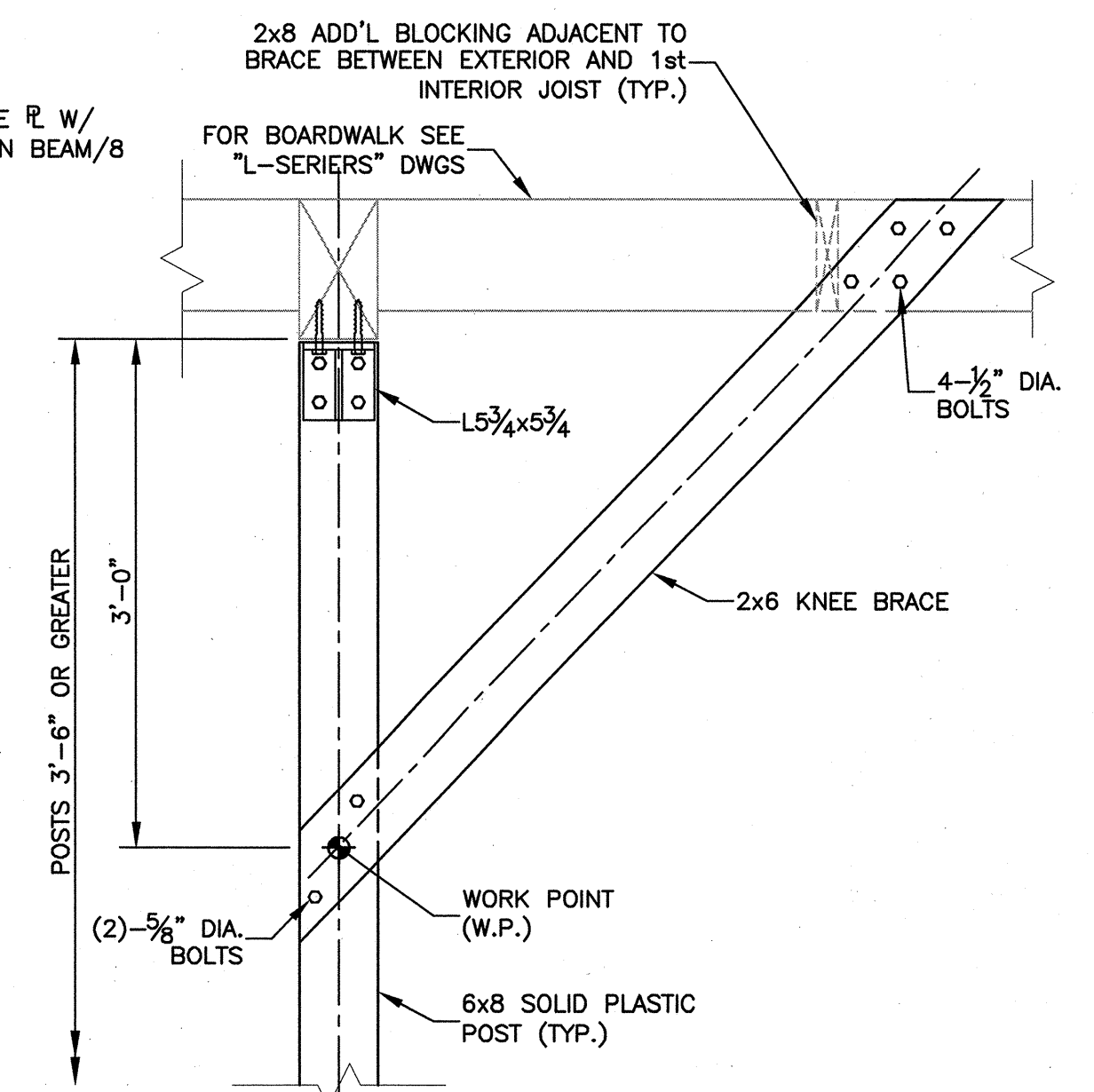
1" = 1'-0"



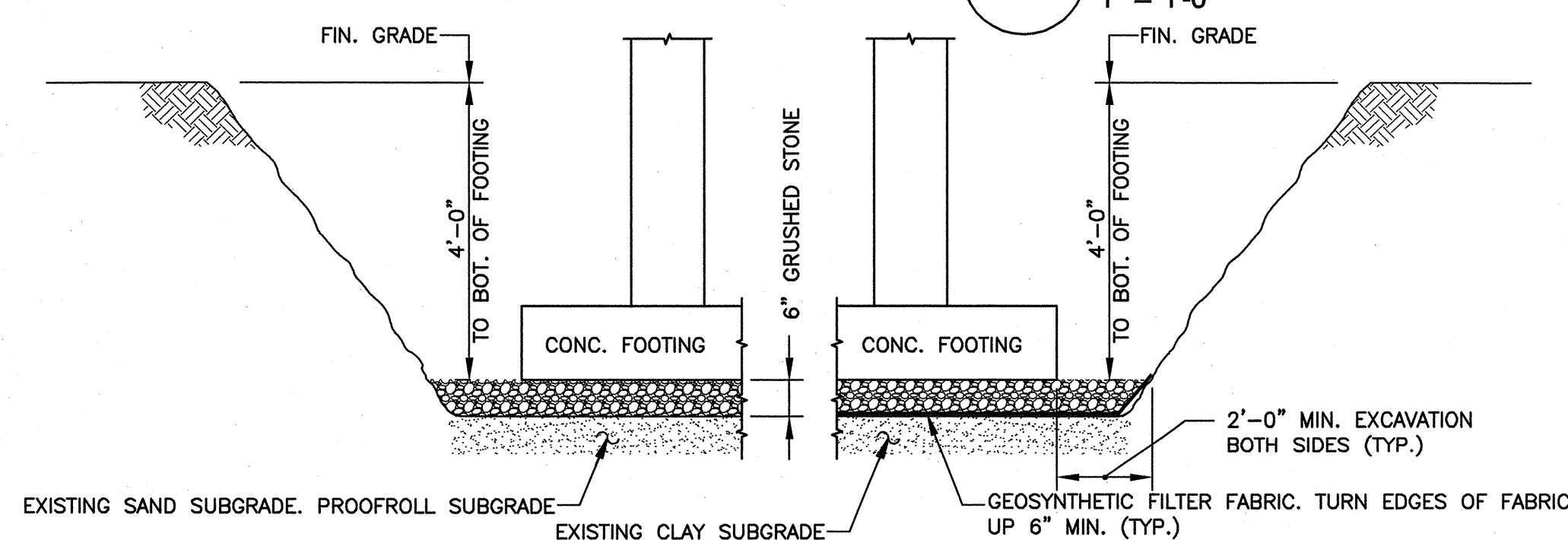
A
1" = 1'-0"



B
1" = 1'-0"



C
1" = 1'-0"



NOTES:

1. ALL EXCAVATION WORK SHALL BE CONDUCTED IN THE DRY, REFER TO SPECIFICATION SECTION 02140.
2. REFER TO EARTHWORK SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR RESPONSIBLE FOR THE OVER-EXCAVATION OF UNSUITABLE SOILS REPLACE W/ COMPACTED STRUCTURAL FILL AS REQ'D TO ESTABLISH BOT. OF FOOTING ELEVATION.

TYPICAL SUB-GRADE PREPARATION DETAIL

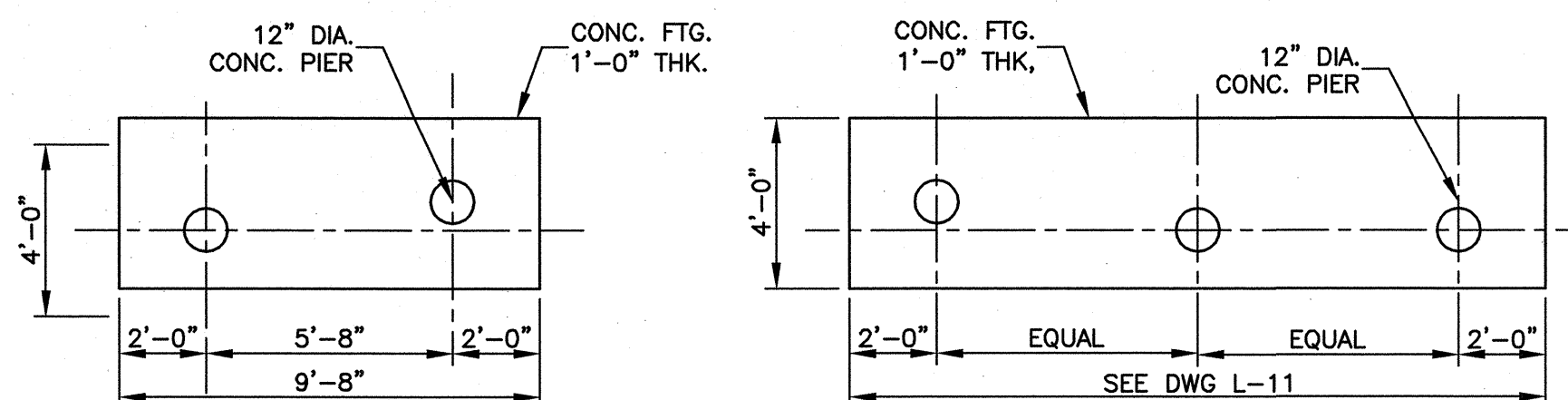
NOT TO SCALE

UNCOATED REINFORCING STEEL TENSION SPLICE AND EMBEDMENT LENGTHS (TENSION DEVELOPMENT LENGTHS), UNLESS OTHERWISE INDICATED

BAR SIZE	MIN. EMBEDMENT LENGTH (IN)		MIN. TENSION LAP SPLICE (IN)	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
4	25	19	33	25
5	31	24	40	31
6	37	29	48	38
7	54	42	70	55
8	62	47	81	61

NOTE:

A TOP BAR IS DEFINED AS HORIZONTAL REINFORCING SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE.



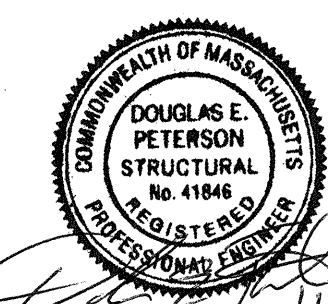
TWO PIER LAYOUT

THREE PIER LAYOUT

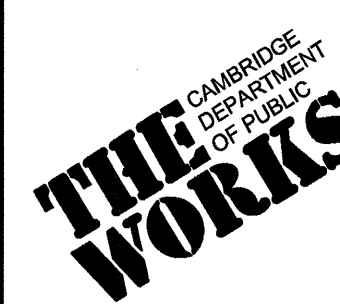
FOOTING SCHEDULE

1/4" = 1'-0"

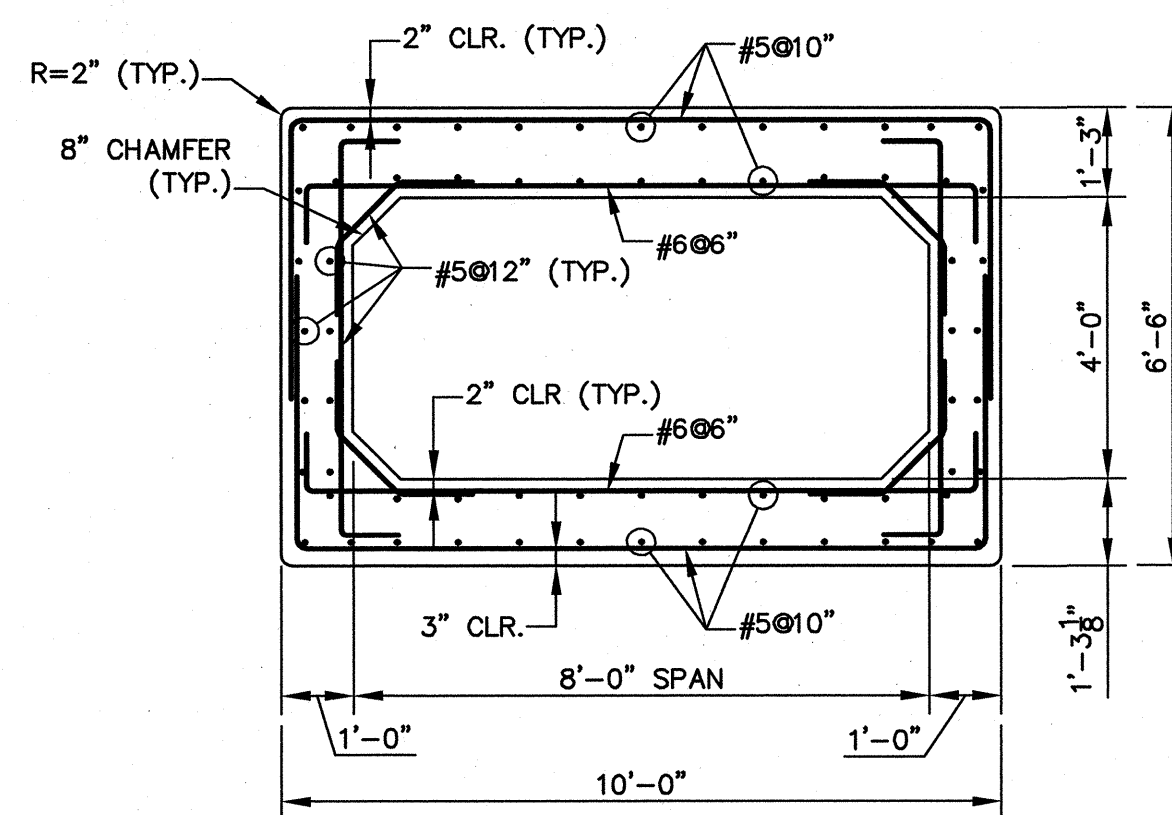
CONFORMED SET



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CITY OF CAMBRIDGE, MASSACHUSETTS		Sheet No.
CAMBRIDGE PARK DRIVE AREA DRAINAGE IMPROVEMENTS		S-9
CONTRACT NO. 12		File No.
ELEVATED BOARDWALK		
GENERAL NOTES AND TYPICAL DETAILS		

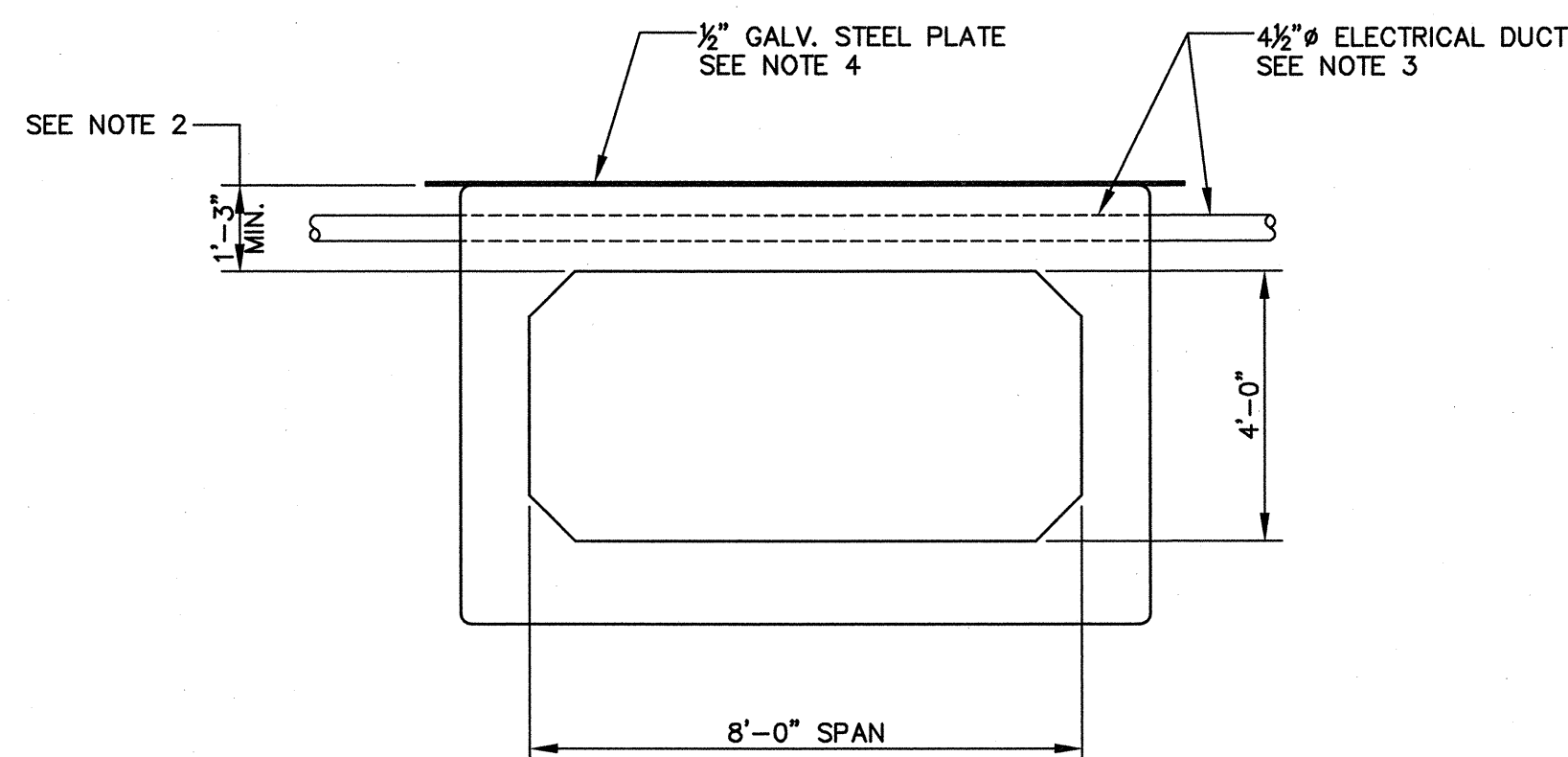


NOTES:

1. REINFORCING SHOWN IS FOR CULVERT CROSSING UNDER GUILFORD/MBTA/MBCR LINES, TRACKS 1 THRU 9 AS SHOWN ON C-14 AND C-15.
2. MAXIMUM BEARING PRESSURE = 3.0 KSF.
3. TRANSVERSE REINFORCING SHALL BE PLACED NORMAL TO THE ϵ OF THE CULVERT.
4. MINIMUM REINFORCEMENT IS SHOWN FOR TYPICAL PRECAST CONCRETE CULVERT SECTION. FINAL DESIGN OF PRECAST CULVERT UNITS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02715.

**TYPICAL CULVERT REINFORCING
UNDER GUILFORD/MBTA/MBCR LINES**

3/8" = 1'-0"

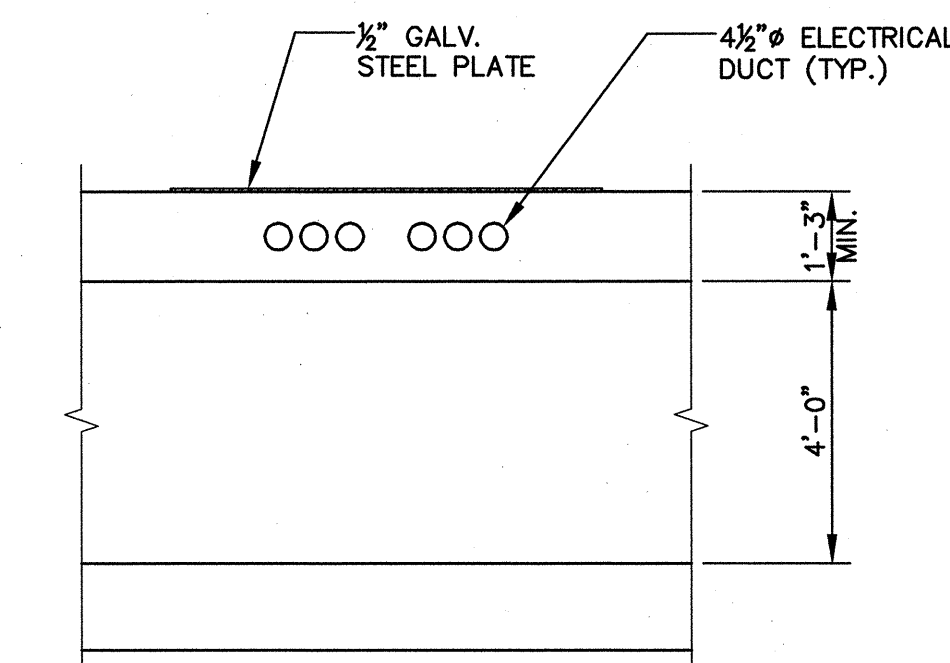


NOTES:

1. TYPICAL CULVERT SECTION SHOWN IS FOR ELECTRICAL DUCTBANK CROSSINGS AT THE INTERSECTION OF CAMBRIDGEPARK DRIVE AS SHOWN ON DWG C-09.
2. DESIGN OF PRECAST CONCRETE CULVERT SECTIONS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02715 AND ANY ADDITIONAL REQUIREMENTS OF THE UTILITY OWNER (NSTAR). CONTRACTOR SHALL COORDINATE DIMENSIONS AND LAYOUT OF CULVERT SECTIONS WITH UTILITY OWNER (NSTAR). CONTRACTOR SHALL SCHEDULE TIMING OF SUBMITTALS FOR THIS CULVERT SECTION TO ALLOW REVIEW AND APPROVAL BY NSTAR.
3. FINAL ELECTRICAL DUCT DIAMETER, SPACING AND MATERIAL TYPE SHALL BE AS REQUIRED BY UTILITY OWNER (NSTAR).
4. PROVIDE 1/2" GALVANIZED STEEL PLATE AND MINIMUM COVER AS REQUIRED BY UTILITY OWNER (NSTAR). CONTRACTOR SHALL EXTEND THE STEEL PLATE BEYOND CULVERT AS REQUIRED TO PROTECT THE ELECTRICAL DUCTBANK VERTICAL TRANSITIONS UNTIL MINIMUM COVER HAS BEEN ACHIEVED.

**TYPICAL CULVERT SECTION
CAMBRIDGEPARK DRIVE
ELECTRICAL DUCTBANK CROSSING**

3/8" = 1'-0"



**TYPICAL CULVERT ELEVATION
CAMBRIDGEPARK DRIVE
ELECTRICAL DUCTBANK CROSSING**

3/8" = 1'-0"

CONFORMED SET

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REGISTERED PROFESSIONAL ENGINEER

Scale	N.T.S.			
Date	SEPTEMBER 1, 2010			
Job No.	1998400.12			
Designed by	DP			
Drawn by	DQH			
Checked by	JM	No.	Description	Date
Approved by	JBC		REVISIONS	

THE WORKS
CAMBRIDGE
DEPARTMENT
OF PUBLIC
WORKS

CITY OF CAMBRIDGE, MASSACHUSETTS	Sheet No.
CAMBRIDGEPARK DRIVE AREA DRAINAGE IMPROVEMENTS CONTRACT NO. 12	S-10
GUILFORD/MBTA/MBCR LINES AND CAMBRIDGEPARK DR. TYPICAL CULVERT SECTIONS	File No.