

GENERAL STRUCTURAL NOTES

BUILDING CODES

- A. THE 2015 INTERNATIONAL BUILDING CODE (IBC) AND ALL SUBSEQUENT SUPPLEMENTS
B. GOVERNING LOCAL BUILDING CODE

DESIGN LOADS

- B. IN ADDITION TO SELF WEIGHT, AND CAP WEIGHT THE PRECAST COLUMBARIUMS SHALL BE DESIGNED FOR THE FOLLOWING LOADS:

TYPICAL	LIVE LOAD 30 PSF	SUPERIMPOSED DEAD LOAD 0 PSF
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C. SNOW LOAD DESIGN CRITERIA:

GROUND SNOW LOAD (P_g):	25 PSF
FLAT ROOF SNOW LOAD (P_f):	21 PSF
EXPOSURE FACTOR (C_e):	1.0
IMPORTANCE FACTOR (I):	1.0
THERMAL FACTOR (C_t) =	1.2

D. WIND LOAD DESIGN CRITERIA:

BASIC WIND SPEED	115 MPH
WIND EXPOSURE	C
EXTERNAL PRESSURE COEFFICIENT (C_f):	± 1.4
IMPORTANCE FACTOR (I):	1.0

E. EARTHQUAKE LOAD DESIGN CRITERIA:

SIMPLIFIED PROCEDURE:	
SEISMIC OCCUPANCY CATEGORY:	II
SEISMIC DESIGN CATEGORY:	A
IMPORTANCE FACTOR (I):	1.0
MAPPED SPECTRAL RESPONSE ACCELERATIONS	(S_s) = 0.128 (S_1) = 0.051
SPECTRAL RESPONSE COEFFICIENTS	(SDS) = 0.102 ($SD1$) = 0.058
SOIL SITE CLASS:	D
SEISMIC RESPONSE COEFFICIENT (C_s):	0.034
RESPONSE MODIFICATION FACTOR (R):	3.0

SPREAD FOOTING FOUNDATIONS

- A. REFER TO "CAST IN PLACE CONCRETE" FOR APPLICABLE CODES AND STANDARDS.

- B. PARAMETERS FOR FOUNDATIONS PER THE GEOTECHNICAL REPORT FOR BALTIMORE NATIONAL CEMETERY PREPARED BY KCI TECHNOLOGIES, INC., DATED DECEMBER 2015 ARE AS FOLLOWS:

1. MINIMUM DEPTH TO BOTTOM OF EXTERIOR FOOTINGS = 30 IN BELOW GRADE
2. NET ALLOWABLE BEARING CAPACITY = 2500 PSF

- C. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2500 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

- D. ALL EXCAVATION AND BACKFILLING OPERATIONS WITHIN THE BUILDING FOOTPRINT, INCLUDING ALL COMPACTION TESTS AND INSPECTIONS, SHALL BE DONE UNDER THE DIRECTION AND SUPERVISION OF A REGISTERED GEOTECHNICAL ENGINEER.

- E. ALL EXISTING SOIL CONTAINING GRAVEL, CONSTRUCTION OR DEMOLITION DEBRIS, ORGANIC SUBSTANCES, OR OTHER FOREIGN OBJECTS SHALL BE REMOVED FROM THE REGION WITHIN THE FOOTPRINT OF THE STRUCTURE.

RETAINING WALLS

- A. REFER TO "CAST IN PLACE CONCRETE" (AND "MASONRY") SECTIONS FOR APPLICABLE CODES AND STANDARDS.

- B. REFER TO PROJECT GEOTECHNICAL REPORT BY KCI TECHNOLOGIES, INC. AND DATED DECEMBER 2015 FOR SITE PREPARATION AND RECOMMENDATIONS.
1. MINIMUM DEPTH TO BOTTOM OF EXTERIOR FOOTINGS FOR FROST PROTECTION = 30 IN BELOW GRADE
2. NET ALLOWABLE BEARING CAPACITY = 2500 PSF
3. EQUIVALENT FLUID LATERAL EARTH PRESSURE FOR CANTILEVERED WALLS = 40H PCF

- C. CONTRACTOR TO SUPPLY OR VERIFY BACKFILL MATERIALS WITH THE FOLLOWING CHARACTERISTICS:

1. SATURATED SOIL DENSITY:	120 PCF
2. FRICTION FACTOR:	0.30
3. COULOMB ACTIVE PRESSURE CONSTANT (K_a):	0.33
4. COEFFICIENT OF PASSIVE PRESSURE (K_p):	2.08

- D. ALL RETAINING WALLS ARE DESIGNED USING THE FOLLOWING FACTORS OF SAFETY:

1. SLIDING = 1.5
2. OVERTURNING = 2.0

- E. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2500 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

- F. ALL RETAINING WALLS SHALL BE BRACED AND SHORED AS REQUIRED DURING BACKFILLING. BOTH SUPPORTING ELEMENTS SHALL BE PLACED AND DEVELOPING FULL REQUIRED STRENGTH PRIOR TO BACK FILLING OF WALLS SUPPORTED AT TOP AND BOTTOM.

CAST IN PLACE CONCRETE

- A. CODES AND STANDARDS:
1. ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"
2. ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
3. ACI 117 "SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"
4. ACI 305 "RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING"
5. ACI 306 "RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING"
6. ACI 347 "RECOMMENDED PRACTICE FOR CONCRETE FORM WORK"
7. ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT"
8. CRSI "MANUAL OF STANDARD PRACTICE"

B. SUBMITTALS:

1. SHOP DRAWINGS FOR REINFORCEMENT INCLUDING BAR LENGTHS AND SPACING.
2. CONCRETE MIX DESIGNS, WITH LOCATIONS AND USAGE DENOTED PER MIX.

C. REINFORCING MATERIALS:

1. STEEL REINFORCEMENT: ASTM A 615, GRADE 60, DEFORMED
2. PLAIN-STEEL WELDED WIRE REINFORCEMENT: ASTM A 185

D. CONCRETE MATERIALS:

1. PORTLAND CEMENT: ASTM C 150, TYPE I/II
2. FLY ASH: ASTM C 618, CLASS F
3. GROUND GRANULATED BLAST FURNACE SLAG: ASTM C 989, GRADE 120
4. NORMAL WEIGHT AGGREGATES: ASTM C 33
a. MAXIMUM COARSE AGGREGATE SIZE: 1 INCH NOMINAL
b. FINE AGGREGATE SHALL BE FREE OF MATERIAL WITH DELETERIOUS REACTIVITY TO ALKALI IN CEMENT.
5. WATER: ASTM C 94, POTABLE

E. ADMIXTURES:

1. AIR ENTRAINMENT: ASTM C 260
2. WATER-REDUCER: ASTM C 494
3. SILICA FUME: ASTM C 1240
4. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED.

F. CONCRETE MIXTURES:

1. FLY ASH, POZZOLAN, GROUND GRANULATED BLAST FURNACE SLAG, AND SILICA FUME MAY BE USED AS NEEDED TO REDUCE THE TOTAL AMOUNT OF PORTLAND CEMENT WHICH WOULD OTHERWISE BE USED BY NOT MORE THAN 40 PERCENT.
a. MAXIMUM SUBSTITUTION OF FLY ASH SHALL BE 20 PERCENT.
b. MAXIMUM SUBSTITUTION OF SILICA FUME SHALL BE 10 PERCENT.

G. PROPORTION NORMAL WEIGHT CONCRETE MIXES AS FOLLOWS:

LOCATION	28 DAY STRENGTH (f'_c)	WATER-CEMENTIOUS RATIO	SLUMP LIMIT	AIR CONTENT
FOUNDATIONS	3000 PSI	0.50	4" (± 1 ")	6.0% (± 1.5)

- A. ALL CONCRETE MIX DESIGNS, INCLUDING CEMENT CONTENT, WATER CEMENT RATIO, FINE AND COARSE AGGREGATE CONTENT AND ALL ADMIXTURES, SHALL BE REVIEWED BY ENGINEER PRIOR TO PLACING FIRST CONCRETE.

- B. ALL CONCRETE SHALL BE SAMPLED AND TESTED BY THE TESTING AGENCY. THE CONTRACTOR SHALL NOTIFY THE TESTING AGENCY 48 HOURS PRIOR TO THE PLACING OF ANY CONCRETE.

- C. MINIMUM COVER FOR ALL REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:

FOUNDATIONS	3 INCHES
SLABS ON GRADE	2 INCHES (TOP)
WALLS	2 INCHES

PRECAST STRUCTURAL CONCRETE

- A. ALL PRECAST CONCRETE ELEMENTS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI. HIGHER STRENGTH CONCRETE MAY BE USED IF REQUIRED BY DESIGN.

MISCELLANEOUS

- A. THE CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE AREA OF CONSTRUCTION AND PREVENT DAMAGE TO THEM. SHOULD DAMAGE OCCUR TO ANY UTILITIES, THE CONTRACTOR IS REQUIRED TO REPAIR THE DAMAGE TO THE SATISFACTION OF THE OWNER AT HIS OWN EXPENSE.

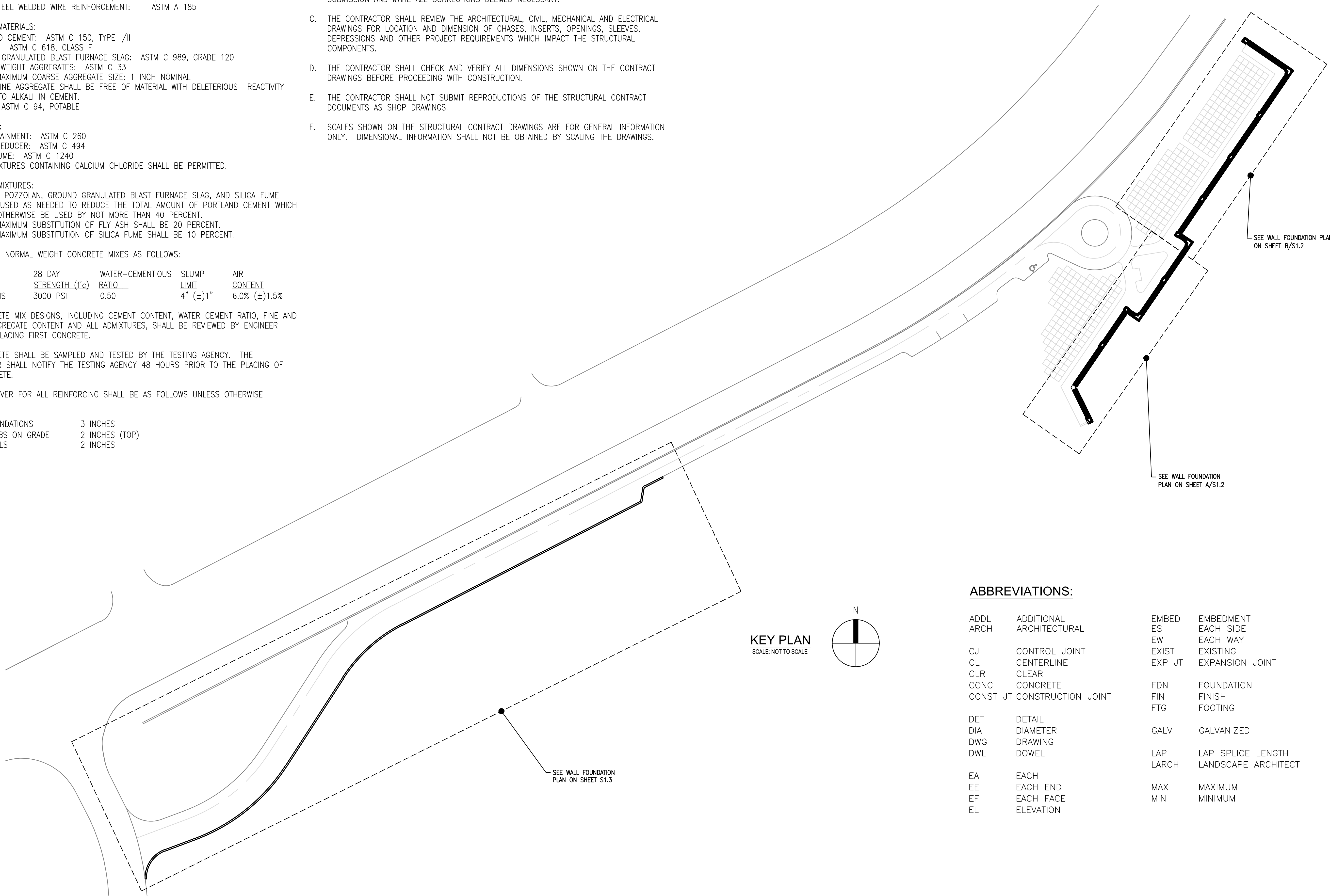
- B. SHOP DRAWINGS FOR ALL STRUCTURAL ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS MUST BE SUBMITTED BY THE CONTRACTOR FOR REVIEW BY THE ENGINEER. IF THE CONTRACTOR FAILS TO SUBMIT THE SHOP DRAWINGS, THE ENGINEER WILL NOT BE RESPONSIBLE FOR STRUCTURAL CERTIFICATION AND CONSTRUCTION OF THE PROJECT. THE SHOP DRAWINGS SHALL INDICATE ANY DEVIATIONS OR OMISSIONS FROM THE CONTRACT DOCUMENTS. THE GENERAL CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS PRIOR TO SUBMISSION AND MAKE ALL CORRECTIONS DEEMED NECESSARY.

- C. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION AND DIMENSION OF CHASES, INSERTS, OPENINGS, SLEEVES, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS WHICH IMPACT THE STRUCTURAL COMPONENTS.

- D. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS BEFORE PROCEEDING WITH CONSTRUCTION.

- E. THE CONTRACTOR SHALL NOT SUBMIT REPRODUCTIONS OF THE STRUCTURAL CONTRACT DOCUMENTS AS SHOP DRAWINGS.

- F. SCALES SHOWN ON THE STRUCTURAL CONTRACT DRAWINGS ARE FOR GENERAL INFORMATION ONLY. DIMENSIONAL INFORMATION SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.



ABBREVIATIONS:

ADDL	ADDITIONAL	EMBED	EMBEDMENT
ARCH	ARCHITECTURAL	ES	EACH SIDE
		EW	EACH WAY
CJ	CONTROL JOINT	EXIST	EXISTING
CL	CENTERLINE	EXP JT	EXPANSION JOINT
CLR	CLEAR		
CONC	CONCRETE	FDN	FOUNDATION
CONST JT	CONSTRUCTION JOINT	FIN	FINISH
		FTG	FOOTING
DET	DETAIL		
DIA	DIAMETER	GALV	GALVANIZED
DWG	DRAWING		
DWL	DOWEL	LAP	LAP SPLICE LENGTH
		LARCH	LANDSCAPE ARCHITECT
EA	EACH		
EE	EACH END	MAX	MAXIMUM
EF	EACH FACE	MIN	MINIMUM
EL	ELEVATION		

BID SET - FOR CONSTRUCTION

		CONSULTANTS:				LANDSCAPE ARCHITECT:				Drawing Title STRUCTURAL GENERAL NOTES AND KEY PLAN		Project Title Construct Columbarium, InGround Cremains & Misc. Site Improvements		Project Number 802-CM3-021		NATIONAL CEMETERY ADMINISTRATION OFFICE OF DESIGN AND CONSTRUCTION			
										Approved Project Director		Location Baltimore National Cemetery 5501 Frederick Ave. Catonsville, MD 21228		Drawing Number S-1.1					
												Date MAY 20, 2016		Checked PB		Drawn RS		Dwg. 29 of 37	
																			

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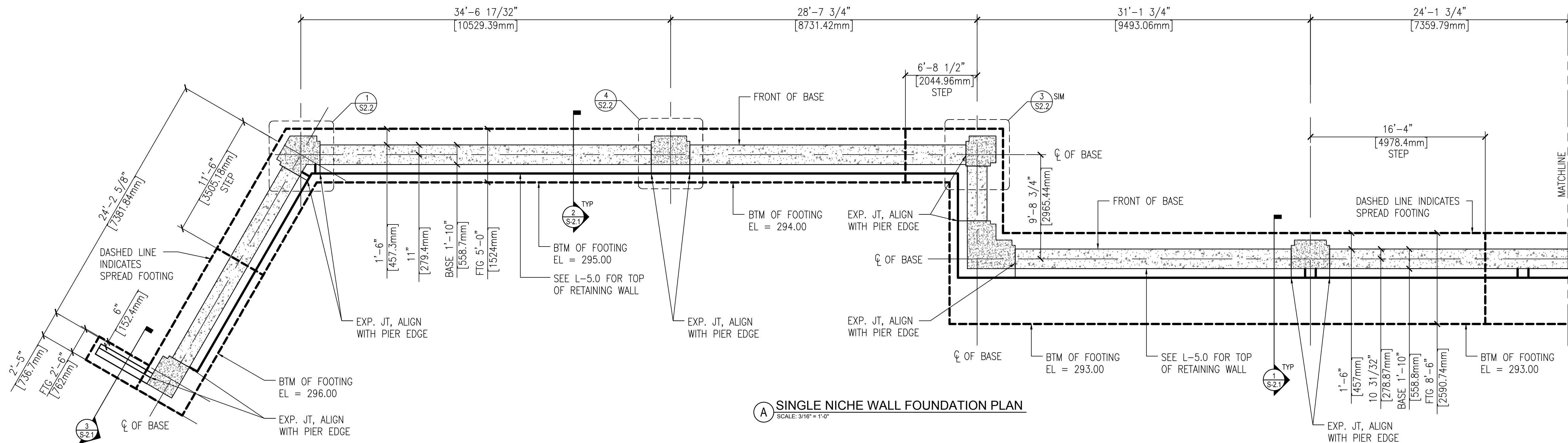
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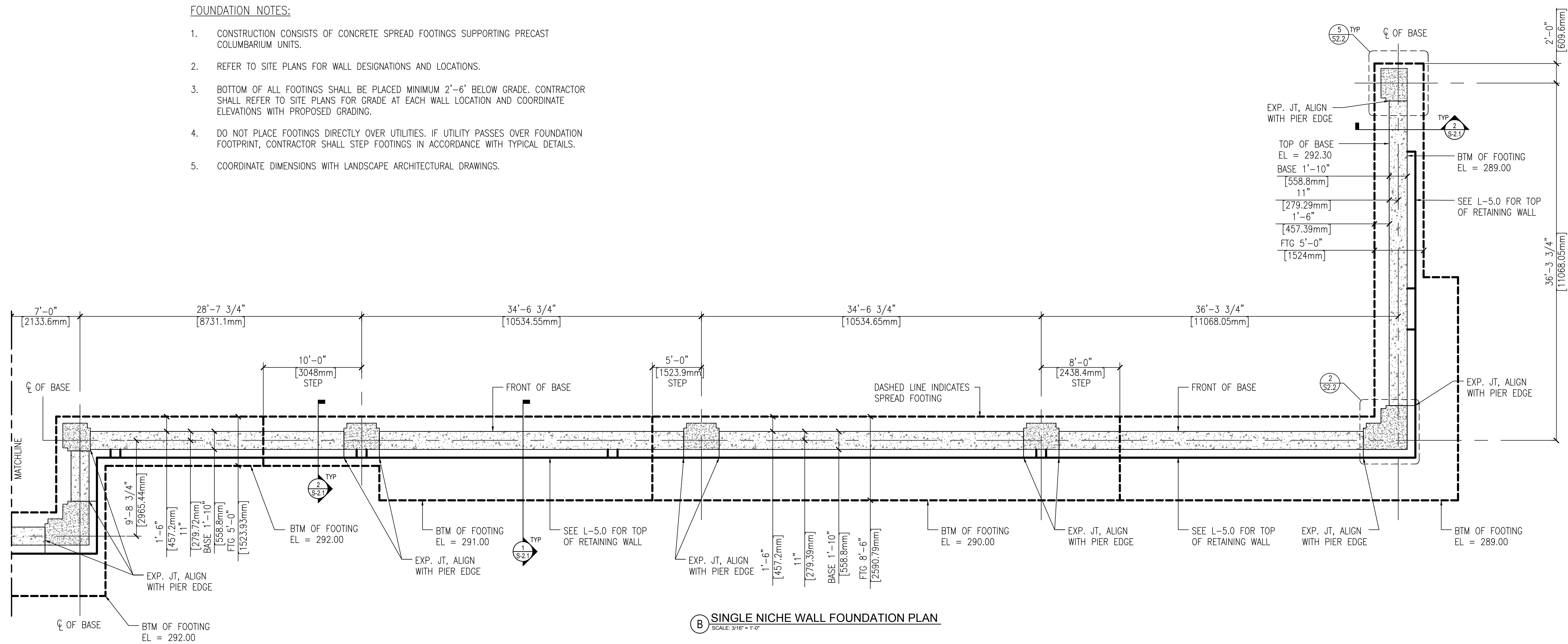
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A SINGLE NICHE WALL FOUNDATION PLAN
SCALE: 3/16" = 1'-0"

FOUNDATION NOTES:

1. CONSTRUCTION CONSISTS OF CONCRETE SPREAD FOOTINGS SUPPORTING PRECAST COLUMBARIUM UNITS.
2. REFER TO SITE PLANS FOR WALL DESIGNATIONS AND LOCATIONS.
3. BOTTOM OF ALL FOOTINGS SHALL BE PLACED MINIMUM 2'-6" BELOW GRADE. CONTRACTOR SHALL REFER TO SITE PLANS FOR GRADE AT EACH WALL LOCATION AND COORDINATE ELEVATIONS WITH PROPOSED GRADING.
4. DO NOT PLACE FOOTINGS DIRECTLY OVER UTILITIES. IF UTILITY PASSES OVER FOUNDATION FOOTPRINT, CONTRACTOR SHALL STEP FOOTINGS IN ACCORDANCE WITH TYPICAL DETAILS.
5. COORDINATE DIMENSIONS WITH LANDSCAPE ARCHITECTURAL DRAWINGS.



B SINGLE NICHE WALL FOUNDATION PLAN
SCALE: 3/16" = 1'-0"

BID SET - FOR CONSTRUCTION

<div>CONSULTANTS:</div> <div><div><div>KCI TECHNOLOGIES</div></div><div><div><div>Agri Engineering INCORPORATED</div></div><div><div><div>Construction Management INCORPORATED</div></div></div><div>930 RIDGEBROOK ROAD SPRINGFIELD, MD 21152 PHONE: (410) 316-7868 FAX: (410) 316-7868 WWW.KCI.COM</div></div></div>		<div>ARCHITECT/ENGINEER:</div> <div><div><div>M.T.R. LANDSCAPE ARCHITECTS</div></div><div>101 BELLEVUE ROAD PITTSBURGH, PA 15229 (412) 931-6455</div></div>		<div>Drawing Title</div> <div>STRUCTURAL COLUMBARIUM FOUNDATION PLAN</div> <div>Approved Project Director</div>	<div>Project Title</div> <div>Bay Ridge National Cemetery Crematorium Niche Improvements</div> <div>Location Baltimore National Cemetery 10000 Bay Ridge Avenue, Baltimore, MD 21228</div> <div>Date FEBRUARY 09, 2016</div> <div>Checked PB</div> <div>Drawn RS</div>	<div>Project Number</div> <div>8920200021</div> <div>Building Number</div> <div>-</div> <div>Drawing Number</div> <div>S-1.2</div> <div>Dwg. 30 of 33</div>	<div>NATIONAL CEMETERY ADMINISTRATION OFFICE OF DESIGN AND CONSTRUCTION</div> <div></div>
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three inches = one foot

one and one half inches = one foot

one inch = one foot

three quarters inch = one foot

one half inch = one foot

three eighths inch = one foot

one quarter inch = one foot

one eighth inch = one foot



1. CONSTRUCTION CONSISTS OF CONCRETE SPREAD FOOTINGS WITH CONCRETE WALL ABOVE.
2. REFER TO L-1.0 FOR WALL DESIGNATIONS AND LOCATIONS.
3. BOTTOM OF ALL FOOTINGS SHALL BE PLACED MINIMUM 2'-6" BELOW GRADE. CONTRACTOR SHALL REFER TO SITE PLANS FOR GRADE AT EACH WALL LOCATION AND COORDINATE ELEVATIONS WITH PROPOSED GRADING.
4. DO NOT PLACE FOOTINGS DIRECTLY OVER UTILITIES, NOTIFY C.O.R. IF THERE IS ANY CONFLICT WITH EXISTING UTILITIES.
5. COORDINATE ALL DIMENSIONS AND STATIONS WITH LANDSCAPE ARCHITECTURAL DRAWINGS.



CONSULTANTS:

 **ENGINEERS**
PLANNERS
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CONSTRUCTION MANAGERS


KCI
TECHNOLOGIES

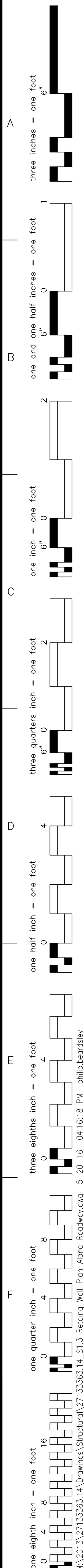
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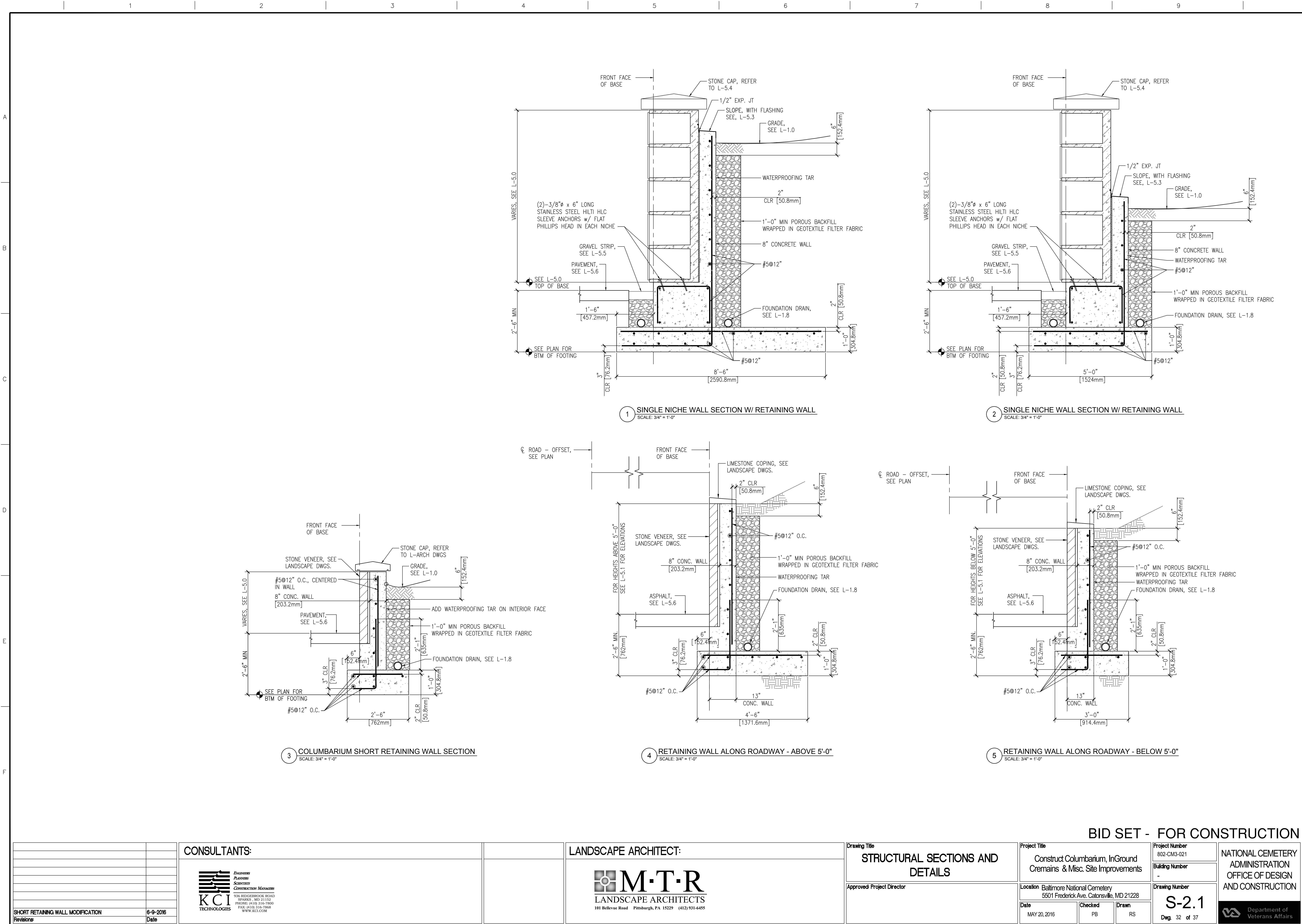


Project Title Construct Columbarium, InGround Cremains & Misc. Site Improvements		
Location Baltimore National Cemetery 5501 Frederick Ave. Catonsville, MD 21228		
Date MAY 20, 2016	Checked PB	Drawn RS

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AND CONSTRUCTION

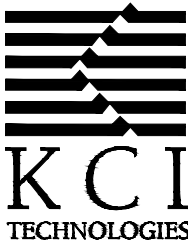
 Department of
Veterans Affairs





SHORT RETAINING WALL MODIFICATION	6-9-2016
Revisions:	Date

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LANDSCAPE ARCHITECT:



M·T·R
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Drawing Title

STRUCTURAL SECTIONS AND DETAILS

Approved Project Director

Project Title

Construct Columbarium, InGround
Cremains & Misc. Site Improvements

Location

Baltimore National Cemetery
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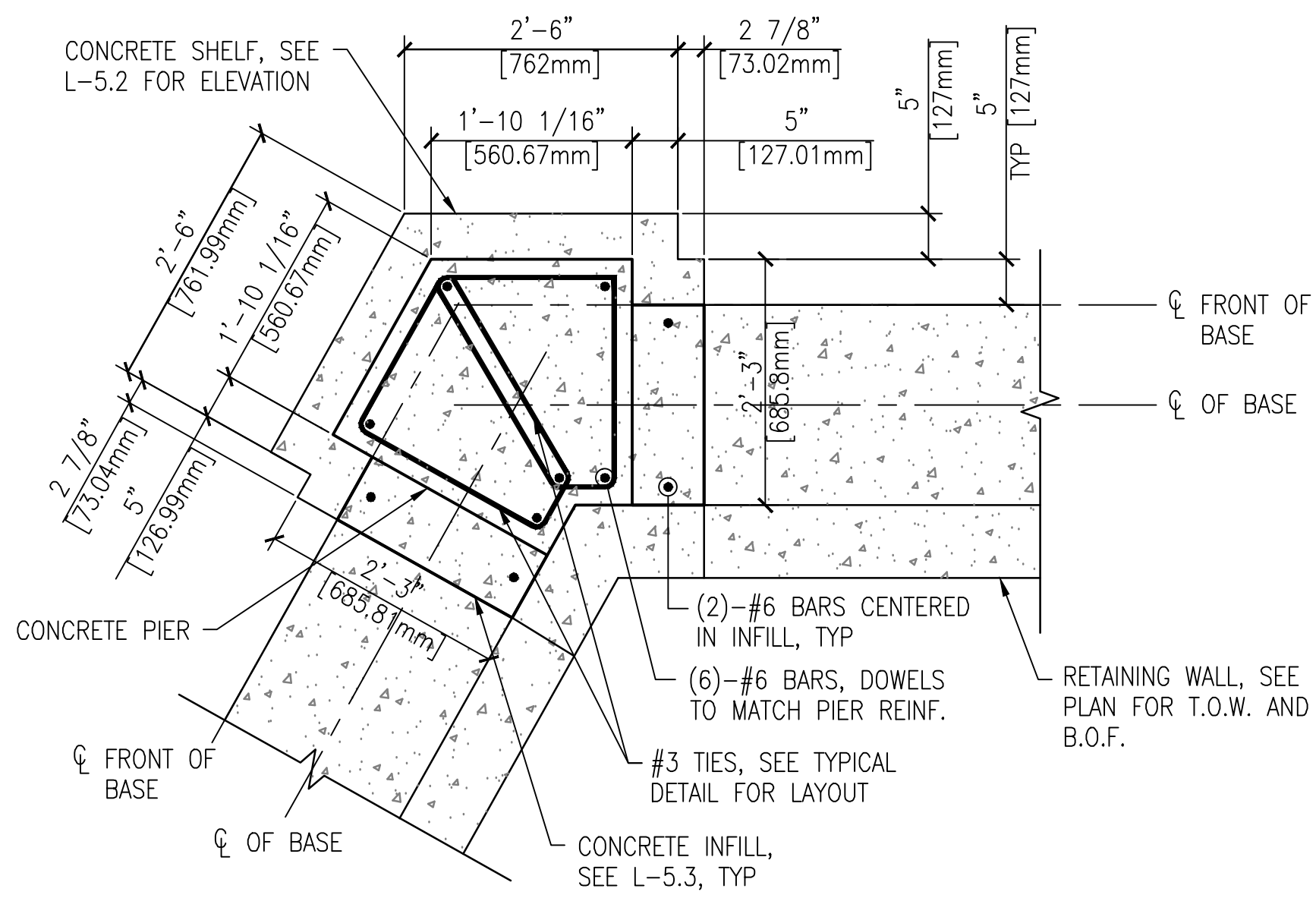
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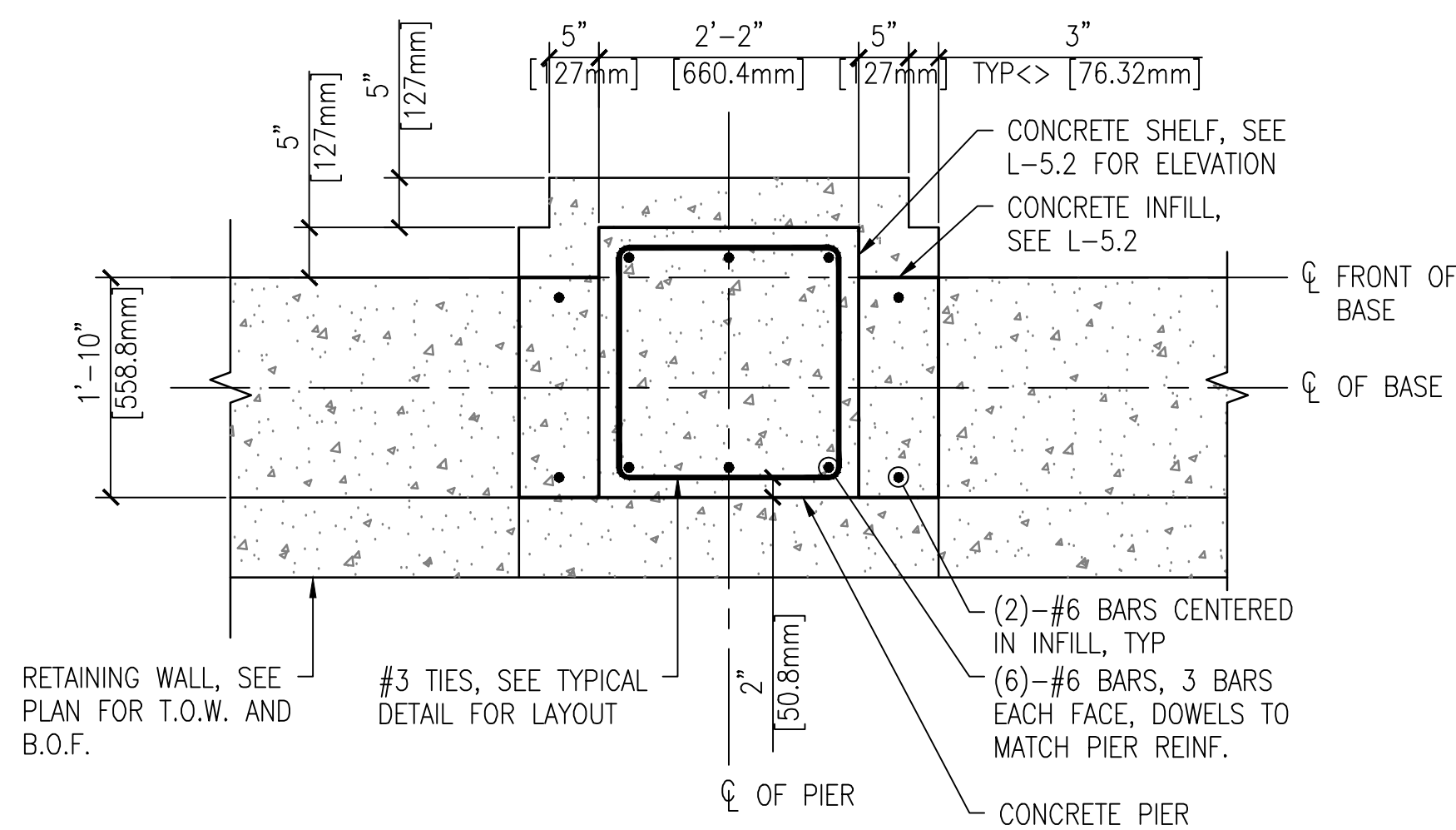
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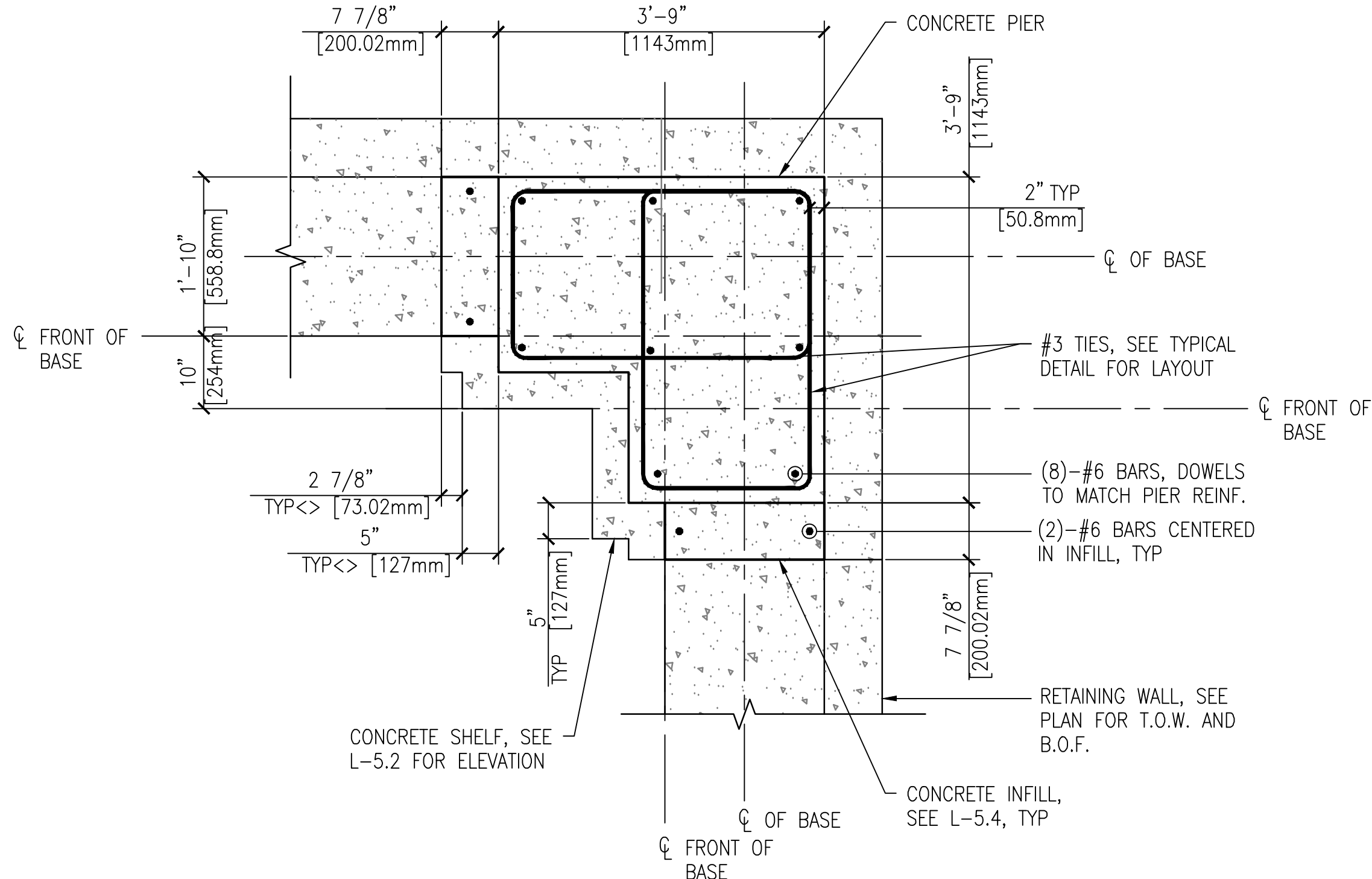
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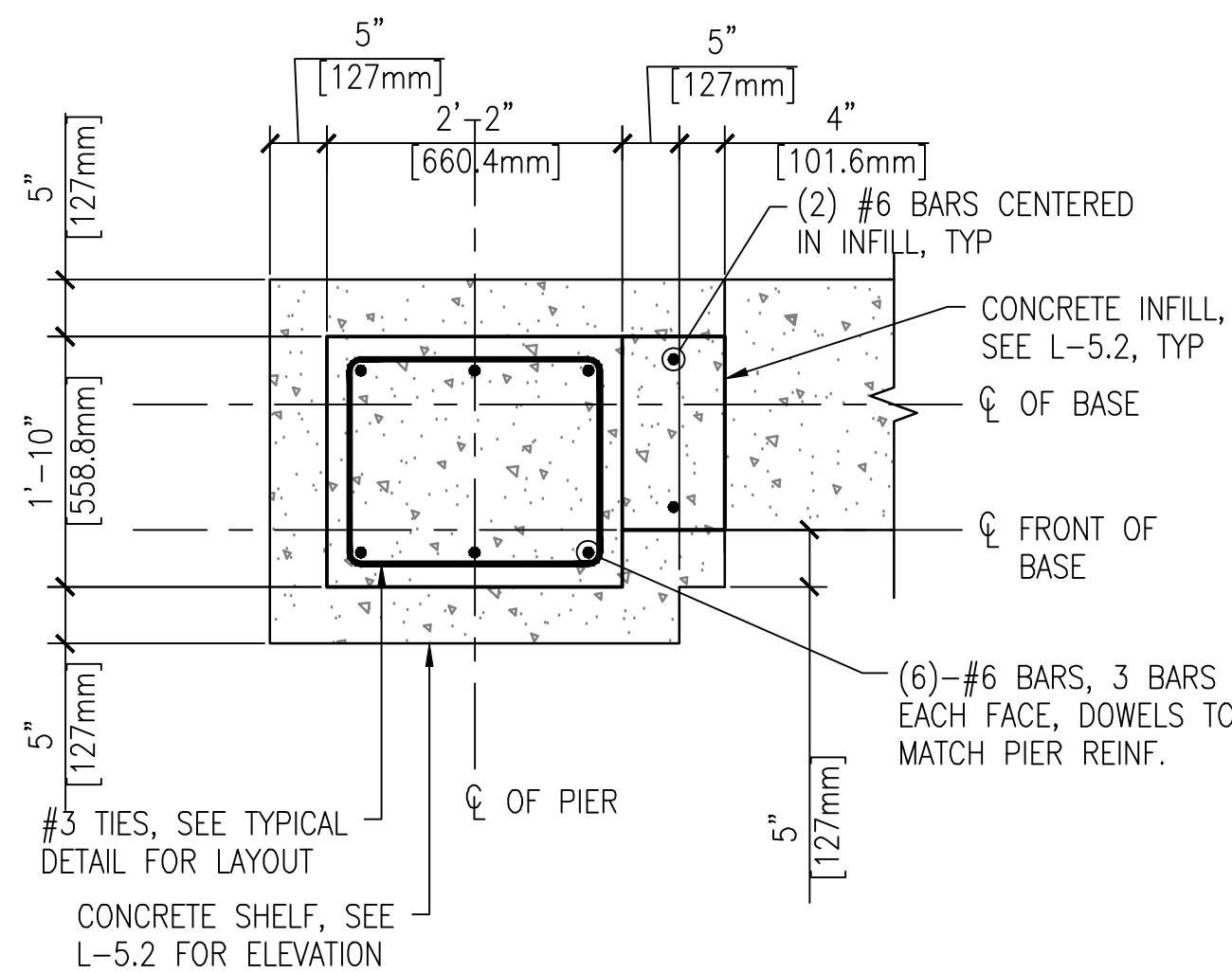
1 COLUMBARIUM 120 DEGREE EXTERIOR COLUMN
SCALE: 3/4" = 1'-0"



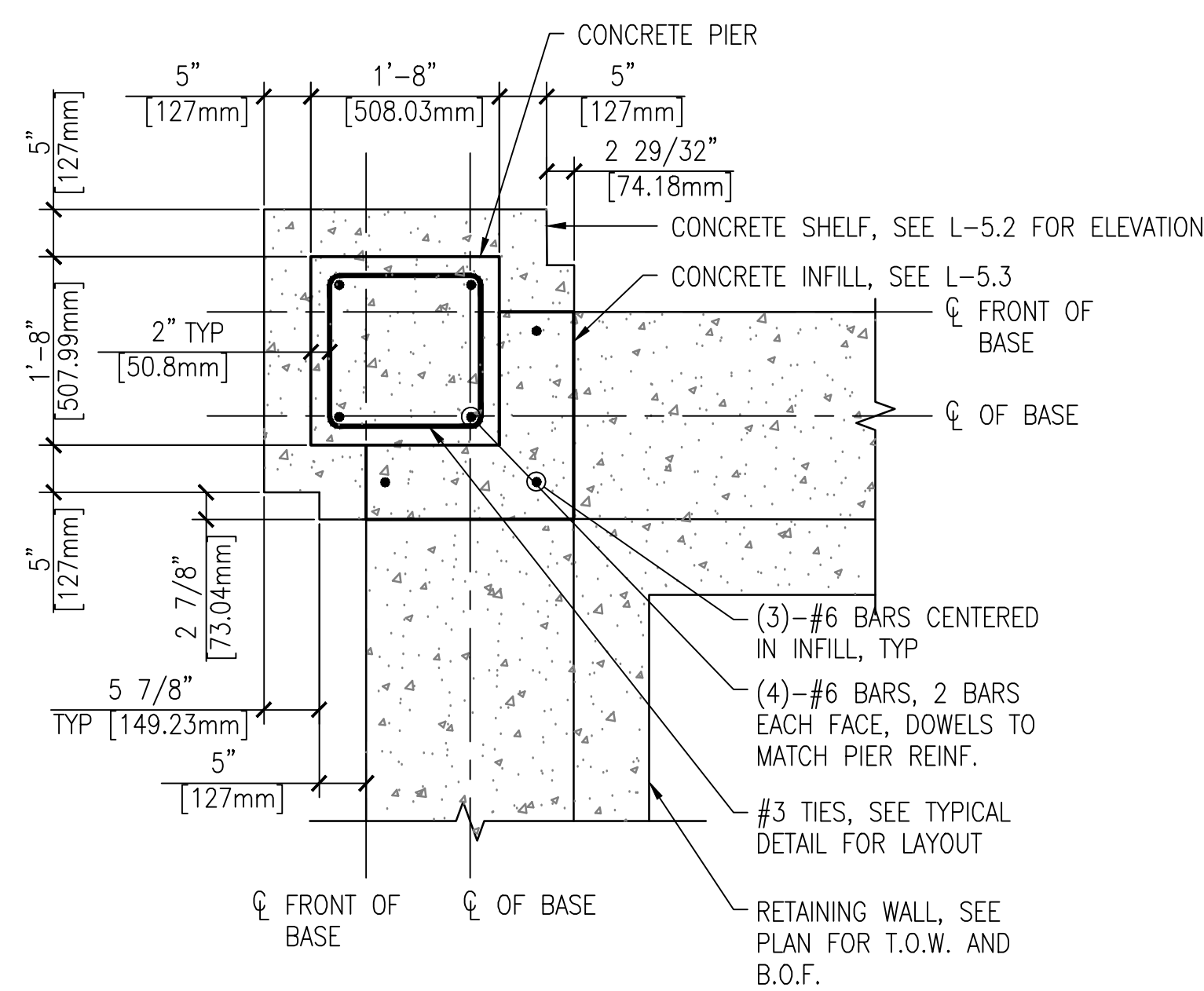
4 COLUMBARIUM MID COLUMN
SCALE: 3/4" = 1'-0"



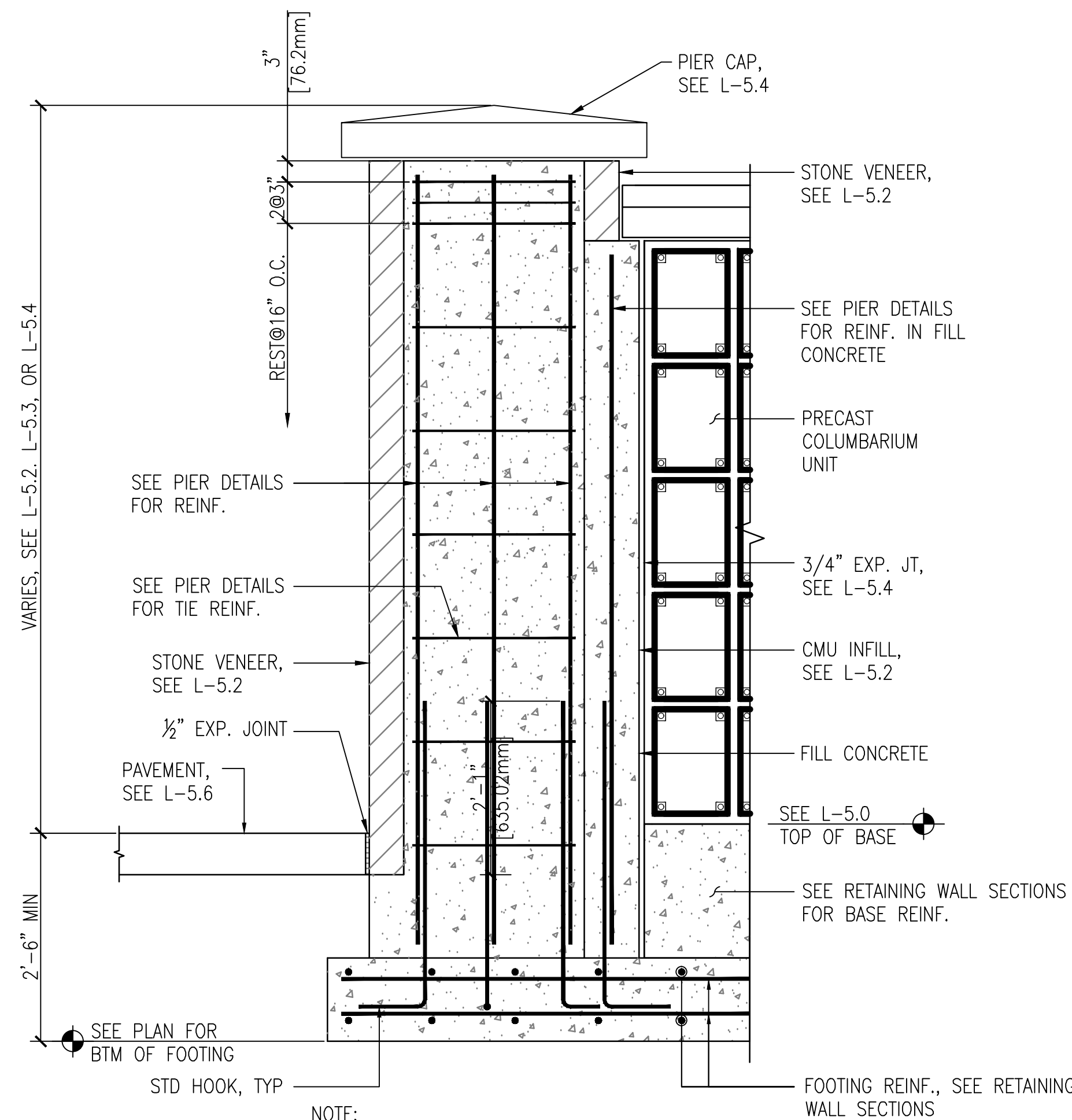
2 COLUMBARIUM 90 DEGREE INTERIOR COLUMN
SCALE: 3/4" = 1'-0"



5 COLUMBARIUM END COLUMN
SCALE: 3/4" = 1'-0"



3 COLUMBARIUM 90 DEGREE EXTERIOR COLUMN
SCALE: 3/4" = 1'-0"



NOTE:

1. THIS DETAIL IS INTENDED TO ILLUSTRATE BAR LAPS AND REINF. LAYOUT ONLY, SEE SPECIFIC PIER DETAILS FOR REBAR SIZING.
2. ALL PIERS (EXCEPT END PIERS) WILL NEED TO HAVE A SAWN-CUT REGLET BACK SURFACE ABOVE RETAINING WALL TO ACCOMMODATE FLASHING. SEE L-5.3 FOR REGLET AND FLASHING DETAIL.

A TYPICAL PIER REINF. DETAIL
SCALE: 3/4" = 1'-0"

three inches = one foot
one inch = one foot
one half inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

CONSULTANTS:



LANDSCAPE ARCHITECT:



Drawing Title

STRUCTURAL SECTIONS AND DETAILS

Approved: Project Director

Project Title

Construct Columbarium, InGround
Cremains & Misc. Site Improvements

Location

Baltimore National Cemetery
5501 Frederick Ave. Catonsville, MD 21228

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-

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S-2.2

Dwg. 33 of 37

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