

STRUCTURAL NOTES

GENERAL NOTES

- 1. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH JOB SPECIFICATIONS AND CIVIL LANDSCAPE DRAWINGS. CONSULT THESE DRAWINGS FOR AND OTHER DETAILS NOT SHOWN ON STRUCTURAL DRAWINGS.
2. ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PART OF THE WORK.
3. THE STRUCTURE IS DESIGNED TO BE SELF SUPPORTING AND STABLE AFTER THE WALL IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO ENSURE SAFETY OF THE WALL AND ITS COMPONENTS DURING ERECTION. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING (AND ACCOMPANYING FOOTINGS), GUYS OR TIEDOWNS.
4. ADDITIONAL OBSERVATIONS AS A RESULT OF REJECTION OF WORK COMPLETED AND/OR ADDITIONAL OBSERVATIONS DUE TO THE DEFICIENCIES IN WORK OBSERVED WILL BE AT THE EXPENSE OF THE CONTRACTOR.
5. ALL STRUCTURAL SHOP DRAWINGS TO BE REVIEWED BY JOB SUPERINTENDENT IN ADDITION TO ALL PERSONNEL DEEMED NECESSARY BY CONTRACTOR PRIOR TO SUBMITTAL TO ENGINEER FOR APPROVAL.
6. THE DESIGN OF THE STRUCTURE SHOWN IN THESE CONSTRUCTION DOCUMENTS IS FOR THE ONE-TIME USE AT THE SPECIFIC SITE REFERENCED IN THE GEOTECHNICAL REPORT

DESIGN CODES

- 2012 INTERNATIONAL BUILDING CODE.
- ACI 318-11 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY.

DESIGN LOADS

Table with columns for WIND, SEISMIC, and LATERAL loads. Includes values for live load, dead load, wind speed, exposure category, seismic design category, and active/passive earth pressure.

FOUNDATIONS

- 1. SEE THE FOLLOWING REPORT FOR COMPLETE GEOTECHNICAL RECOMMENDATIONS AND INSTALLATION PROCEDURES. SITE PREPARATION AND FOUNDATION SHALL COMPLY WITH THE FOLLOWING:
- PREPARED BY: ARAGON GEOTECHNICAL, INC.
- TITLE: PRELIMINARY GEOTECHNICAL INVESTIGATION COLUMBARIUM-5000 NICHES RIVERSIDE NATIONAL CEMETERY RIVERSIDE, CALIFORNIA PROJECT NO. 4301-SF
- DATE: SEPTEMBER 15, 2015
2. GEOTECHNICAL RECOMMENDATIONS WERE PREPARED WITH SPECIFIC KNOWLEDGE OF THE SPECIFIC STRUCTURE TYPE, CONSTRUCTION TYPE, AND LIKELY LOADS SHOWN ON THE CONSTRUCTION DOCUMENTS. DETERMINING THE AMOUNT OF SETTLEMENT ACCEPTABLE FOR THE STRUCTURE TYPE IS THE RESPONSIBILITY OF THE GEOTECHNICAL ENGINEER. ALL STRUCTURAL DESIGNS WERE BASED UPON STAYING WITHIN THE LIMITS GIVEN WITHIN THE GEOTECHNICAL REPORT FOR THE LOADS PRESCRIBED BY THE BUILDING CODE REFERENCED IN THE DESIGN CODES SECTION OF THESE STRUCTURAL NOTES.
DESIGNS BASED UPON AN ALLOWABLE BEARING CAPACITY OF 2,000 psf. SEE GEOTECHNICAL REPORT FOR ALL REQUIREMENTS RELATED TO THE CONSTRUCTION OF THE FOOTINGS ON GRANULAR ENGINEERED FILL MATERIAL.

PLUMBING SLEEVES

MINIMUM SLEEVE SPACING SHALL BE TWO DIAMETERS CENTER TO CENTER TO THE LARGER SLEEVE OR 6" CLEAR BETWEEN SLEEVES, WHICHEVER IS GREATER. PRIOR TO CONSTRUCTION SLEEVE LOCATIONS AND SIZES SHALL BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.

CONCRETE TESTING

- 1. CONCRETE TESTING SHALL BE PAID FOR BY THE CONTRACTOR. TESTING LABORATORY SHALL PERFORM THE FOLLOWING TESTS ON CAST-IN-PLACE CONCRETE:
A) ASTM C143 - "STANDARD TEST METHOD FOR SLUMP OF PORTLAND CEMENT CONCRETE."
B) ASTM C39 - "STANDARD TEST METHOD FOR COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS." A SEPARATE TEST SHALL BE CONDUCTED FOR EACH CLASS, FOR EVERY 50 CUBIC YARDS (OR FRACTION THEREOF), PLACED PER DAY, REQUIRED CYLINDER(S) QUANTITIES AND TEST AGE AS FOLLOWS:
1 AT 7 DAYS
2 AT 28 DAYS
PROVIDE ONE ADDITIONAL RESERVE CYLINDER TO BE TESTED UNDER THE DIRECTION OF THE ENGINEER, IF REQUIRED, IF 28 DAY STRENGTH IS ACHIEVED, THE ADDITIONAL CYLINDER(S) MAY BE DISCARDED.

PENETRATIONS

NO PENETRATIONS SHALL BE MADE IN ANY STRUCTURAL MEMBERS OTHER THAN THOSE LOCATED ON THESE DRAWINGS WITHOUT PREVIOUS APPROVAL OF THE ENGINEER.

CONCRETE MIX DESIGN

- 1. SHALL BE MIX DESIGNED BY A RECOGNIZED TESTING LABORATORY TO ACHIEVE A STRENGTH AT 28 DAYS AS LISTED BELOW WITH A PLASTIC AND WORKABLE MIX:
4,000 psi - RETAINING WALLS AND FOOTINGS
4,000 psi - ALL OTHER CONCRETE

- 2. SUBMIT PROPOSED MIX DESIGN WITH RECENT FIELD CYLINDER OR LAB TESTS FOR REVIEW PRIOR TO USE. MIX SHALL BE UNQUELTY IDENTIFIED BY MIX NUMBER OR OTHER POSITIVE IDENTIFICATION. CONCRETE SHALL COMPLY WITH ALL THE REQUIREMENTS OF ASTM STANDARD C94 FOR MEASURING, MIXING, TRANSPORTING, ETC. CONCRETE TICKETS SHALL BE TIME STAMPED WHEN CONCRETE IS BATCHED. THE MAXIMUM TIME ALLOWED FROM THE TIME THE MIXING WATER IS ADDED UNTIL IT IS DEPOSITED IN ITS FINAL POSITION SHALL NOT EXCEED ONE AND ONE HALF (1-1/2) HOURS. IF FOR ANY REASON THERE IS A LONGER DELAY THAN STATED ABOVE, THE CONCRETE SHALL BE DISCARDED. IT SHALL BE THE RESPONSIBILITY OF THE TESTING LAB TO NOTIFY THE OWNER'S REPRESENTATIVE AND THE CONTRACTOR OF ANY NONCOMPLIANCE WITH THE ABOVE. ALL SLABS SHALL BE CURED USING CURING COMPOUND MEETING ASTM STANDARD C939 TYPE 1 AND SHALL HAVE A FUGITIVE DYE. THE COMPOUND SHALL BE PLACED AS SOON AS THE FINISHING IS COMPLETED OR AS SOON AS THE WATER HAS LEFT THE UNFINISHED CONCRETE. ALL SCUFFED OR BROKEN AREAS IN THE CURING MEMBRANE SHALL BE RECOATED DAILY. CALCIUM CHLORIDE SHALL NOT BE UTILIZED; OTHER ADMIXTURES MAY BE USED ONLY WITH THE APPROVAL OF THE ENGINEER.
3. CONCRETE SHALL UTILIZE TYPE I/II CEMENT.
4. THE CONCRETE STRENGTHS SHOWN IN THE SECTION ABOVE AND IN THE SPECIFICATIONS ARE MINIMUM COMPRESSIVE STRENGTHS. THE ENGINEER SHALL DETERMINE IF THE CONCRETE IS ACCEPTABLE, OR TO BE REMOVED, OR TO RECEIVE SPECIAL CURING IF THE COMPRESSIVE STRENGTHS ARE LESS THAN SPECIFIED.
5. ALL CONCRETE SHALL NOT BE AIR ENTRAINED UNLESS NOTED OTHERWISE.
6. WATER REDUCING AGENTS MAY BE USED IN THE CONCRETE MIX. PLASTICIZERS AND SUPER-PLASTICIZERS MAY BE USED ONLY WHEN WRITTEN PERMISSION OF THE ENGINEER IS GIVEN.
7. NO SALTS OF ANY KIND MAY BE USED IN CONCRETE BEFORE OBTAINING THE ENGINEER'S WRITTEN PERMISSION FOR THEIR USE.
8. MAXIMUM WATER TO CEMENTITIOUS MATERIAL RATIO FOR ALL CONCRETE SHALL NOT EXCEED 0.5.

CONCRETE AND REINFORCING PLACEMENT

- 1. ALL CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ACI 301 AND ACI 117.
2. ALL REINFORCING STEEL TO BE ASTM A615, GRADE 60 (#4 AND LARGER), EXCEPT WHERE NOTED OTHERWISE. REINFORCING SHALL NOT BE WELDED.
3. ALL REINFORCING STEEL BARS TO BE DETAILED AND PLACED IN ACCORDANCE WITH THE LATEST ACI MANUALS.
4. LAP ALL REINFORCING SPLICES IN CONCRETE A MINIMUM OF 48 BAR DIAMETERS OR 24 INCHES, WHICHEVER IS GREATER, UNLESS NOTED OTHERWISE ON DRAWINGS (CLASS B SPLICE).
5. PROVIDE CORNER BARS OF SAME BAR DIAMETER AS SPECIFIED FOR THE WALL, BEAM OR FOOTING. PROVIDE MINIMUM OF 40 BAR DIAMETER LAP FOR ALL CORNER BARS, UNLESS NOTED OTHERWISE.
6. PROVIDE FOUNDATION DOWELS AS SHOWN. MINIMUM SIZE DOWELS TO BE #4, UNLESS OTHERWISE NOTED. ALL VERTICAL REINFORCING STEEL IN COLUMNS AND PIERS, OR VERTICAL REINFORCING IN WALLS, SHALL BE DOWELED INTO THE FOOTINGS WITH SAME SIZE AND QUANTITY DOWEL AS THE VERTICAL REINFORCING.
7. WHERE SHOWN ON THE DRAWINGS, PROVIDE WELD PLATES, WELDMENTS, OR CONCRETE INSERTS FOR FASTENING AND SECURING OTHER COMPONENTS. CONCRETE INSERTS SHALL BE FURNISHED BY THE CONTRACTOR REQUIRING THEM AND INSTALLED BY THE CONTRACTOR CASTING THE CONCRETE AROUND THEM. CLIP ANGLES SHALL BE FURNISHED BY THE CONTRACTOR REQUIRING THEM.
8. REINFORCING STEEL SHALL RECEIVE CONCRETE COVER AS FOLLOWS:

Table with columns for DESCRIPTION and MINIMUM COVER. Includes entries for cast against and permanently exposed to earth, exposed to earth or weather, and beams and columns.

NOT EXPOSED TO EARTH OR WEATHER OR IN CONTACT WITH THE GROUND, SLABS AND WALLS
#11 BARS OR SMALLER 3/4"
#14 AND #18 1 1/2"
BEAMS AND COLUMNS 1 1/2"

- 9. PROVIDE TWO (2) #5'S, ONE AT EACH FACE, UNLESS NOTED OTHERWISE, AROUND ALL OPENINGS GREATER THAN 12"x12" IN CAST-IN-PLACE CONCRETE. EXTEND REINFORCING 2'-0" BEYOND OPENING IN BOTH DIRECTIONS. CONTACT ENGINEER FOR ALL OPENINGS GREATER THAN 12"x12" FOR DESIGN.
10. COLD WEATHER AND HOT WEATHER PROVISIONS OF ACI 306 AND 305 (CURRENT EDITIONS), RESPECTIVELY, SHALL BE MAINTAINED.

PRECAST CONCRETE COLUMBARIUM UNITS

- 1. SEE S-SERIES 400 AND L-SERIES DRAWINGS FOR NOTES, SECTIONS AND DETAILS.
2. REFER TO SPECIFICATION SECTION 034550 "PRECAST CONCRETE COLUMBARIUM UNITS" FOR FURTHER INFORMATION.

SPECIAL INSPECTION AND TESTING

- 1. SPECIAL INSPECTION AND MINIMUM TESTING SHALL BE PERFORMED IN ACCORDANCE WITH 2012 IBC AND ALL REFERENCED MATERIALS AND TABLES.
2. INSPECTION SHALL BE PROVIDED BY AN INDEPENDENT TESTING AGENCY HIRED AT THE CONTRACTOR'S EXPENSE. AGENCY INSPECTION PERSONNEL SHALL MEET THE INSPECTOR QUALIFICATIONS FOR EACH MATERIAL ITEM AS INDICATED IN THE SPECIFICATIONS.
3. ANY MATERIAL OR PLACEMENT DEVIATIONS FROM MINIMUMS SHOWN ON THE DRAWINGS OR IN SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
4. IN ADDITION TO THE CONCRETE IBC INSPECTION TABLES, THE INSPECTOR SHALL VERIFY THAT ALL CONCRETE MAINTAIN TOLERANCES SPECIFIED IN ACI 117-90 STANDARD SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION & MATERIALS.
5. TESTING - ANY FAILED FIELD TEST SHALL BE REPORTED TO THE RC/COR IMMEDIATELY.

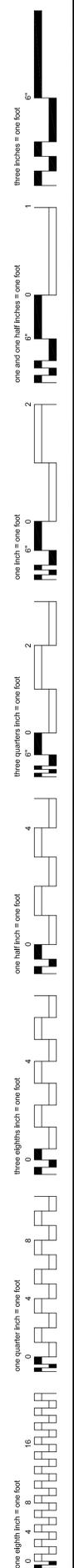
ABBREVIATIONS

Table of abbreviations for structural elements, materials, and construction terms. Includes ADD'L, AT, AND, AMERICAN PLYWOOD, ASSOCIATION, ALTERNATE, ARCHITECTURAL, BASEMENT, BEAM, BEARING, BITUMINOUS, BLOCK, BLOCKING, BOND BEAM, BOARD, BOTTOM, BUILDING, CANTILEVER, CENTER LINE, CENTER TO CENTER, CHANNEL, CAST IN PLACE, CLEAR, COLUMN, COMPOSITE, CONCRETE, CONCRETE MASONRY UNIT, CONNECTION, CONSTRUCTION, CONTROL JOINT, CONTINUOUS, CONTRACTOR, DECK BEARING, DEAD LOAD, DEGREE, DEMOLITION, DETAIL, DIAMETER, DIMENSION, DOWEL, DRAWING'S, DRILLED PIER, EACH, EACH FACE, EACH WAY, EAST, ELECTRICAL, ELEVATION, ELEVATOR, EXISTING, EXPANSION JOINT, EXTERIOR, FINISHED FLOOR, FOOT, FOOTING, FOUNDATION, GALVANIZED, GAUGE, GENERAL CONTRACTOR, GLUED LAMINATED LUMBER, GYPSUM BOARD, GIRDER TRUSS, HEADED STUD, HIGH POINT, HOOK, HOLLOW CORE PLANK, HORIZONTAL STRUCTURAL SECTION, HORIZONTAL, INCH, INSULATION, INTERIOR, JOINT, JOIST, JOIST BEARING, KIPS, LAMINATED VENEER LUMBER, LIGHT WEIGHT, UNTELE, LIVE LOAD, LONG LEG HORIZONTAL, LONGITUDINAL, MASONRY OPENING, MAXIMUM, MECHANICAL, MICRO LAMINATED LUMBER, MINIMUM, MISCELLANEOUS, MOMENT, MANUFACTURER, NORTH, NECESSARY, NOMINAL, NOT IN CONTRACT, NOT TO SCALE, NUMBER, ON CENTER, OPENING, OPPOSITE, OVER HEAD, POWDER ACTUATED FASTENER, POUND, PLANK, PLATE, PLYWOOD, POST TENSION, POUND, POUNDS PER SQUARE FOOT, PRECAST, RADIUS, REINFORCE, REQUIRED, REVERSE, ROOF DRAIN, ROUGH SAWN, SCHEDULE, SECTION, STRUCTURAL ENGINEER OF RECORD, SHEET, SIMILAR, SOUTH, SPECIFICATION, SQUARE, STANDARD, STEEL, TEMPERATURE, THROUGH, TONGUE AND GROOVE, TOP AND BOTTOM, TOP OF BEAM, TOP OF CONCRETE, TOP OF FOOTING, TOP OF MASONRY, TOP OF PIER, TOP OF STEEL, TOP OF WALL, TYPICAL, UNLESS NOTED OTHERWISE, VERTICAL, FIELD VERIFY, WELDED WIRE FABRIC, WEST, WITH, WOOD, WITH OR MINUS.

IBC 2012 TABLE 1705.6 REQUIRED VERIFICATION AND INSPECTION OF SOILS. Table with columns for VERIFICATION AND INSPECTION TASK, FREQUENCY OF INSPECTION, and REQUIRED ON THIS PROJECT.

REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION IBC 2012 (TABLE 1705.3). Table with columns for VERIFICATION AND INSPECTION, CONTINUOUS, PERIODIC, REFERENCED STANDARD, IBC REFERENCE, PERIODIC STAGES, and REQUIRED ON THIS PROJECT.

MATERIALS LEGEND. Table with columns for MATERIALS and SECTION. Includes DENOTES EXISTING IN PLAN & SECTION, COMPACTED FILL, GRANULAR FILL, CONCRETE IN SECTION, GROUT IN SECTION, STEEL IN SECTION, and MASONRY IN SECTION.



Revisions table with columns for Revisions and Date.

CONSULTANTS: Albertson Engineering Inc. 3202 W. MAIN, SUITE C RAPID CITY, SOUTH DAKOTA 57702 605.343.9606

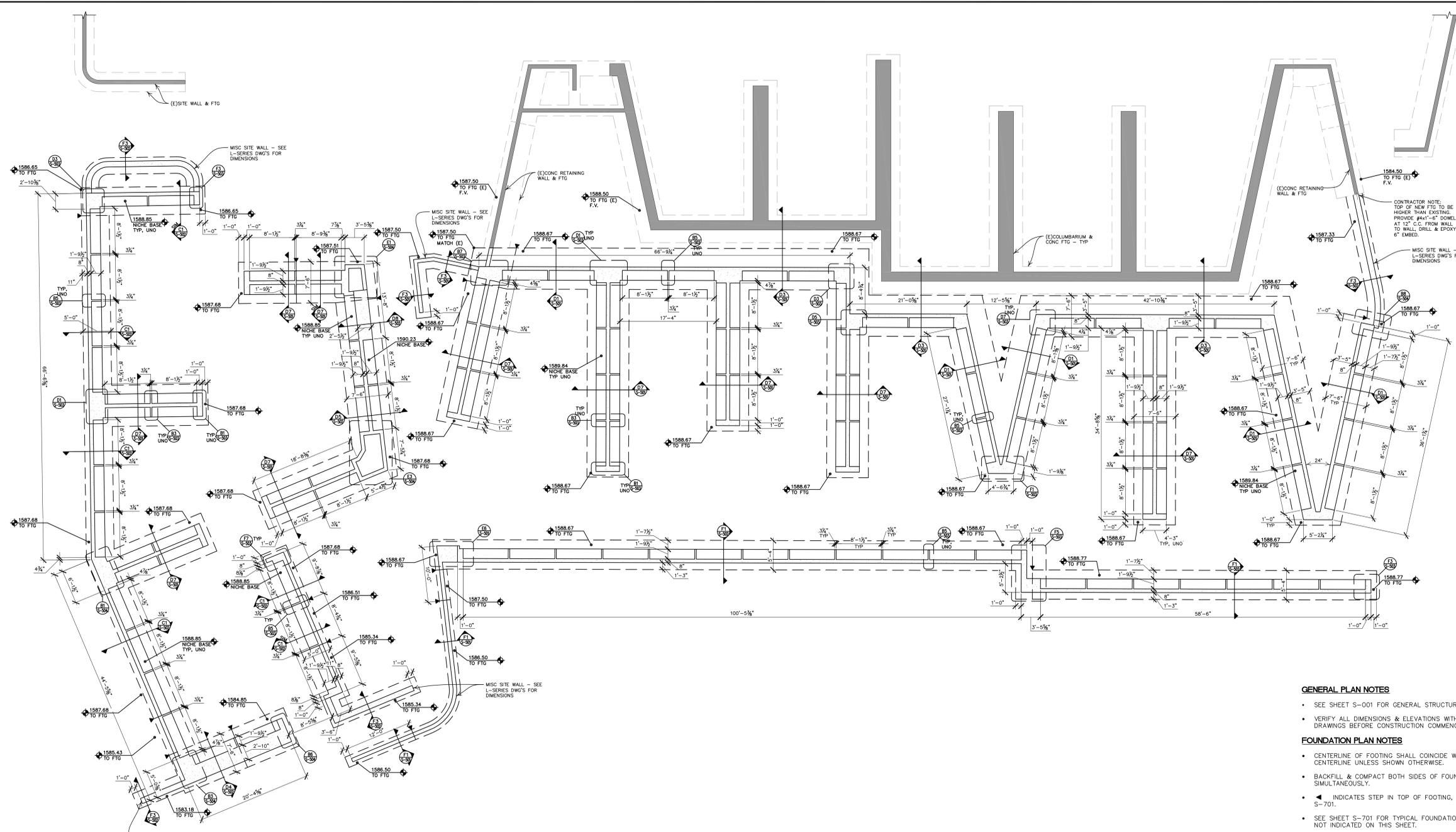
ARCHITECT/ENGINEERS: 517 Seventh Street Rapid City, SD 57701 (605) 342-9470 (605) 348-0571 (fax)

Drawing Title: GENERAL STRUCTURAL NOTES, ABBREVIATIONS, LEGENDS + IBC INSPECTION TABLES. Approved: Project Director

Project Title: Expand Columbarium A. Project Number: 901CM3040. Location: 22495 Van Buren Blvd, Riverside National Cemetery, Riverside CA 92518. Date: March 28, 2016. Checked: DEL. Drawn: CA. Drawing Number: S-001. Dwg: 32 of 47.

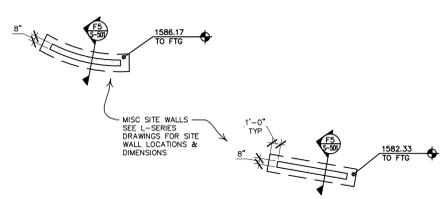
NCA DESIGN AND CONSTRUCTION SERVICE. Department of Veterans Affairs.

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



- GENERAL PLAN NOTES**
- SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES.
 - VERIFY ALL DIMENSIONS & ELEVATIONS WITH LANDSCAPE & CIVIL DRAWINGS BEFORE CONSTRUCTION COMMENCES.
- FOUNDATION PLAN NOTES**
- CENTERLINE OF FOOTING SHALL COINCIDE WITH THE FOUNDATION WALL CENTERLINE UNLESS SHOWN OTHERWISE.
 - BACKFILL & COMPACT BOTH SIDES OF FOUNDATION WALLS SIMULTANEOUSLY.
 - INDICATES STEP IN TOP OF FOOTING, SEE TYPICAL SECTIONS ON S-701.
 - SEE SHEET S-701 FOR TYPICAL FOUNDATION DETAILS & SCHEDULES IF NOT INDICATED ON THIS SHEET.

COLUMBARIUM FOUNDATION PLAN
 SCALE: 1/8" = 1'-0"



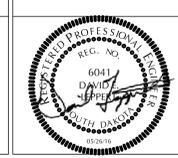
SITE WALL FOUNDATION PLAN
 SCALE: 1/8" = 1'-0"

Revisions	Date

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FOURFRONT DESIGN INC.

Drawing Title
 COLUMBARIUM FOUNDATION PLAN + SITE WALL FOUNDATION PLANS

Approved: Project Director

Project Title
 Expand Columbarium A

Location 22495 Van Buren Blvd, Riverside National Cemetery, Riverside CA 92518

Date March 28, 2016

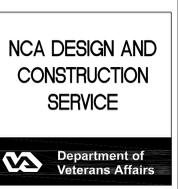
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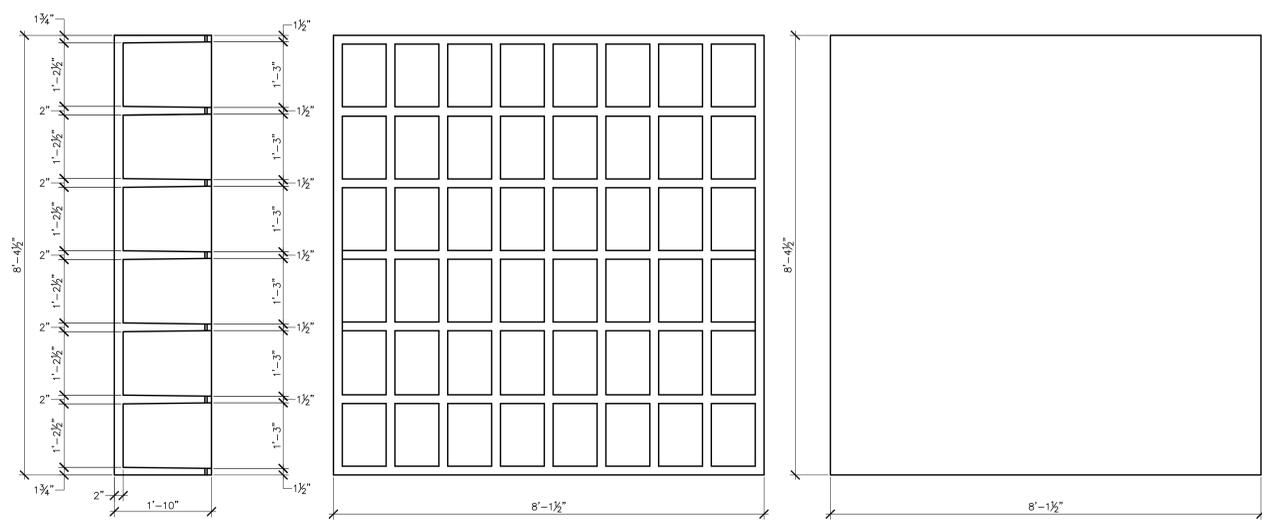
Project Number
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Bulking Numbers
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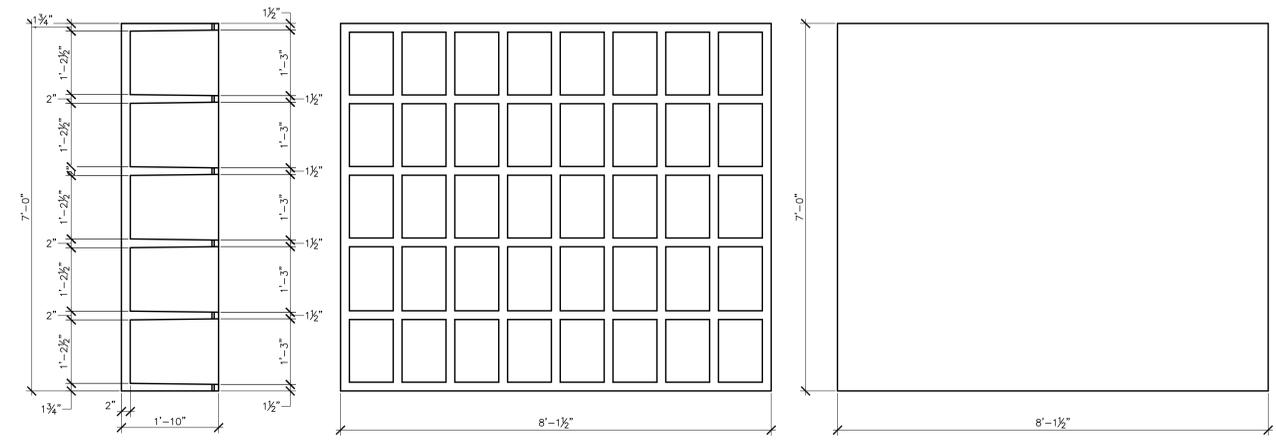
Drawing Number
 S-101
 Dwg 33 of 47



three eighths inch = one foot
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 three quarters inch = one foot
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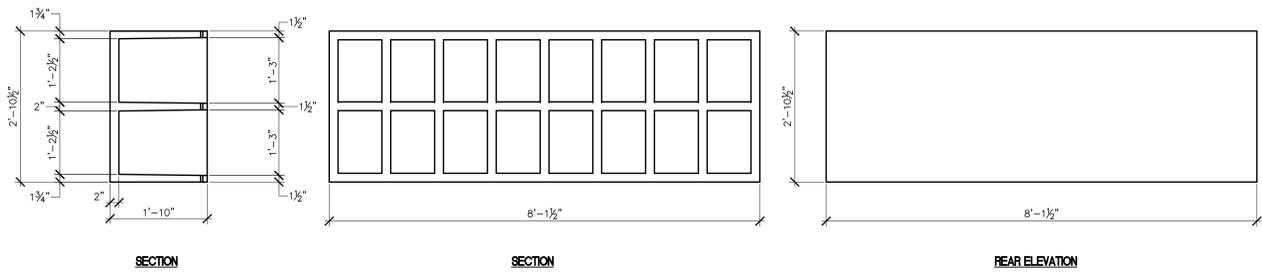
CI SECTION - 6 HIGH COLUMBARIUM NICHE UNIT
 SCALE: 3/4" = 1'-0"



DI SECTION - 5 HIGH COLUMBARIUM NICHE UNIT
 SCALE: 3/4" = 1'-0"

GENERAL NOTES FOR PRECAST UNITS

1. PREDRILLED GRANITE NICHE COVERS WILL BE SUPPLIED BY OWNER. CONTRACTOR SHALL INSTALL AS PART OF THE BASE BID.
2. ALL HARDWARE TO BE STAINLESS STEEL.
3. ALL EXPOSED CONCRETE ON COLUMBARIUM UNITS TO BE FINISHED TO MATCH EXISTING. PROVIDE APPROVED SAMPLE.
4. CAST-IN-PLACE COLUMBARIUM ROOF TO MATCH EXACTLY THOSE EXISTING AT THE SITE IN COLUMBARIUM A.
5. MANUFACTURER OF PRECAST ITEMS TO PROVIDE ALL REINFORCING REQUIRED FOR STRUCTURAL STABILITY. PROVIDE CALCULATIONS BY A LICENSED STRUCTURAL ENGINEER FOR ALL PRECAST UNITS, CONNECTIONS, AND ANCHORAGES.
6. PRECAST CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF $f_c = 5,000$ PSI AT 28 DAYS.
7. REINFORCING SHALL CONFORM TO ASTM A615 GRADE 60. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185, GALVANIZED.

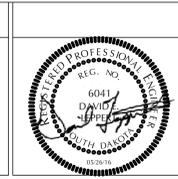


FI SECTION - 2 HIGH COLUMBARIUM NICHE UNIT
 SCALE: 3/4" = 1'-0"

Revisions	Date

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Drawing Title PRECAST COLUMBARIUM DETAILS
Approved: Project Director

Project Title Expand Columbarium A
Location 22495 Van Buren Blvd, Riverside National Cemetery, Riverside CA 92518
Date March 28, 2016
Checked DEL
Drawn CA

Project Number 901CM3040
Building Numbers ---
Drawing Number S-401
Dwg 35 of 47

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 Department of Veterans Affairs