

one eighth inch = one foot
0 4 8 16
one quarter inch = one foot
0 4 8
three eighths inch = one foot
0 4 8 12 16
one half inch = one foot
0 4 8 12 16
one inch = one foot
0 4 8 12 16
three quarters inch = one foot
0 4 8 12 16
one inch = one foot
0 4 8 12 16
one and one half inches = one foot
0 4 8 12 16 20
three inches = one foot
0 4 8 12 16 20 24

GENERAL

- 1) CODES: ALL MATERIALS AND WORK SHALL CONFORM TO THE REQUIREMENTS OF:
- 2012 INTERNATIONAL BUILDING CODE (IBC)
 - ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
 - VA SEISMIC DESIGN REQUIREMENTS H-18-8, FEBRUARY 2011.
 - NATIONAL CEMETERY ADMINISTRATION (NCA) FACILITIES DESIGN GUIDE, MARCH 2010.
 - ACI 318-11 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
 - ACI 530-11 BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.
 - AISC 360-10 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
 - AISC 341-10 SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS.
 - AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION.
 - AWS D1.1 AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE-STEEL.
 - AISI 2007 SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS.
- 2) CONSTRUCTION METHODS AND PROJECT SAFETY: THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE METHODS, PROCEDURES OR SEQUENCE OF CONSTRUCTION. TAKE NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE DURING CONSTRUCTION. NEITHER THE OWNER NOR ARCHITECT/ENGINEER WILL ENFORCE SAFETY MEASURES OR REGULATIONS. CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING AND BRACING, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.
- 3) CONSTRUCTION LOADS: MATERIALS SHALL BE EVENLY DISTRIBUTED IF PLACED ON FRAMED FLOORS OR ROOFS. LOADS SHALL NOT EXCEED THE ALLOWABLE LIVE LOADING FOR THE SUPPORTING MEMBERS AND THEIR CONNECTIONS.
- 4) CHANGES TO THE DRAWINGS: OBTAIN PRIOR WRITTEN APPROVAL.
- 5) SUBSTITUTIONS: PROVIDE MANUFACTURER'S APPROVED PRODUCT EVALUATION REPORTS [ESR] AND A LIST OF ALL PROPOSED SUBSTITUTIONS TO THE ENGINEER FOR REVIEW AND WRITTEN APPROVAL BEFORE FABRICATION.
- 6) VERIFICATION: VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS BEFORE STARTING WORK. NOTIFY THE OWNER IMMEDIATELY OF ANY DISCREPANCIES.
- 7) SIMILAR WORK: WHERE CONSTRUCTION DETAILS ARE NOT SHOWN OR NOTED FOR ANY PART OF THE WORK, SUCH DETAILS SHALL BE THE SAME AS FOR SIMILAR WORK SHOWN ON THE DRAWINGS.
- 8) COORDINATION: STRUCTURAL DRAWINGS SHALL BE COORDINATED WITH OTHER DRAWINGS OF THE PROJECTS AS FOLLOWS:
- a) SEE ARCHITECTURAL DRAWINGS FOR:
1. SIZES AND LOCATIONS OF ALL DOORS, WINDOWS AND OTHER OPENINGS
 2. LOCATIONS OF PARTITIONS
 3. SIZE AND LOCATION OF CURBS, DEPRESSED AREAS, FLOOR DRAINS, SLOPES, CHANGES IN LEVELS, CHAMFERS, GROVES, INSERTS, ETC.
 4. SIZE AND LOCATION, TREADS AND RISES, HANDRAIL/GUARDRAIL OF STAIRS
 5. DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS
- b) SEE MECHANICAL ELECTRICAL AND PLUMBING DRAWINGS FOR THE FOLLOWING:
1. SIZE AND LOCATION OF EQUIPMENT AND EQUIPMENT BASES
 2. OPENINGS, TRENCHES, RECESSES FOR DUCT, PIPE AND CONDUIT RUNS SUPPORT, BRACING AND ANCHORAGES FOR EQUIPMENT AND PIPING ANCHOR BOLTS
 3. EQUIPMENT SUPPORT FRAMING, PADS, AND ANCHORS HAVE BEEN DESIGNED BASED ON ASSUMED DIMENSIONS AND WEIGHT LOADS. THE ACTUALLY PROCURED EQUIPMENT MAY VARY. CONTRACTOR SHALL COORDINATE ALL DIMENSIONS AND WEIGHTS IN THE SHOP DRAWINGS, CLEARLY MARK THE VARIATIONS ON A SET OF DESIGN DRAWING AND SUBMIT FOR ENGINEER'S APPROVAL
- 9) DO NOT SLEEVE THROUGH FOOTINGS, COLUMNS, BEAMS OR GIRDERS FOR PIPES OR CONDUITS UNLESS AS DETAILED ON THE STRUCTURAL DRAWINGS
- 10) CONFLICTS: NOTES AND DETAILS ON THE DRAWINGS TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS IN CASE OF CONFLICT. RESOLVE CONFLICT AND OBTAIN APPROVAL FROM ARCH./ENGINEER PRIOR TO WORK.

DESIGN CRITERIA

- 1) DEAD LOADS: ACTUAL WEIGHT OF BUILDING MATERIALS AND PERMANENT EQUIPMENT.
- 2) LIVE LOADS:
- | | |
|-----------------------|--------------------|
| ROOF: | 20 PSF, REDUCIBLE. |
| WASH STATION: | 100 PSF |
| COVERED STORAGE: | 250 PSF |
| MAINTENANCE BUILDING: | 250 PSF |
- 3) SEISMIC LOAD:
- | | | |
|--------------------------------|------------|-----------|
| MAXIMUM CONSIDERED EARTHQUAKE: | Ss=1.12g | S1=0.42g |
| SITE CLASS: D: | Fo=1.0 | Fv=1.5 |
| | Sms=1.12g | Sm1=0.63g |
| | Sds=0.747g | Sd1=0.42g |
- RISK CATEGORY: II
- IMPORTANCE FACTOR Ie: 1.0
- SEISMIC DESIGN CATEGORY: D
- 4) LATERAL PRESSURE ON INTERIOR PARTITIONS = 5 PSF
- 5) WIND LOAD:
- | | |
|-------------------------------|-----------|
| BASIC WIND SPEED (3 SEC GUST) | = 110 MPH |
| EXPOSURE: | = C |

FOUNDATION

1. REFER TO THE SOIL REPORT BY STEVENS, FERRONE & BAILEY ENGINEERING COMPANY, INC. DATED JAN. 27, 2015 (PROJECT NO. 361-20) FOR SOIL CLASSIFICATION AND RECOMMENDATIONS. GENERAL CONTRACTOR SHALL OBTAIN A COPY OF THE SOILS REPORT AND OBSERVE ALL RECOMMENDATIONS IN THE REPORT.
2. FOR GENERAL REQUIREMENTS OF EARTHWORK, SUBGRADE PREPARATION, ENGINEERED BACKFILL AND COMPACTION, OVEREXCAVATION, WATERPROOFING AND OTHER PERTINENT REQUIREMENTS AND INFORMATION, REFER TO SOIL REPORT AND SPECIFICATIONS.
3. DRILLED PIERS:
- DRILLED PIER INSTALLATION SHALL BE DONE UNDER THE SUPERVISION OF, AND PER RECOMMENDATIONS BY, THE GEOTECHNICAL ENGINEER.
 - THE HOLE SHALL BE DRILLED FOR THE PIER TO THE DEPTH REQUIRED WITHOUT DRILLING FLUIDS.
 - THE BOTTOM OF ALL PIER EXCAVATIONS SHALL BE THOROUGHLY CLEANED OF LOOSE MATERIAL AND FREE OF WATER BEFORE PLACING REINFORCING STEEL AND CONCRETE.
 - CASING OF THE DRILLED HOLE SHALL BE INSTALLED AS REQUIRED TO PREVENT CAVING OF THE SOIL, AND AS REQUIRED BY THE GEOTECHNICAL ENGINEER.
 - PLACE CONCRETE IN PIERS THROUGH HOPPER OR EQUIVALENT, SUCH THAT FALL IS VERTICAL DOWN SHAFT, WITHOUT HITTING SIDES OR REINFORCEMENT. FREE FALL CONCRETE SHALL NOT EXCEED 5'-0".
 - REMOVE THE CASINGS AS THE LEVEL OF THE CONCRETE RISES WHERE CASINGS ARE REQUIRED.
 - VIBRATE THE TOP 5 FEET OF THE PIER CONCRETE AFTER CASING HAS BEEN REMOVED.
 - ALLOWABLE DRILLED PIER SKIN FRICTION: 500 PSF BOTTOM OF (E) UNDOCUMENTED FILL TO 5' BELOW. 1000 PSF 5' BELOW (E) UNDOCUMENTED FILL TO BOTTOM OF PIER.
 - PASSIVE RESISTANCE: 350 PCF BOTTOM OF (E) UNDOCUMENTED FILL TO 5' BELOW. 600 PCF 5' BELOW (E) UNDOCUMENTED FILL TO BOTTOM OF PIER.
4. DO NOT PLACE FOOTING/GRADE BEAM REINFORCEMENT UNTIL SOIL ENGINEER OF RECORD MAKES AN OBSERVATION OF THE BEARING SURFACE.
5. FOOTING SHALL HAVE A MINIMUM EMBEDMENT OF 18" BELOW THE LOWEST ADJACENT FINISHED GRADE.
6. ALL PIPES (WATER LINES, SEWER LINES, ETC.) AND CONDUITS RUNNING THROUGH WALLS/SLABS SHALL BE PROTECTED WITH 1/2" EXPANSION MATERIAL. CONTINUOUS FOOTINGS/GRADE BEAMS PERPENDICULAR TO PIPE RUNS SHALL BE EITHER LOWERED TO ALLOW PIPES TO PASS THRU ABOVE SUCH FOOTINGS/GRADE BEAMS OR HAVE CONCRETE JACKET IF PIPES ARE LOW ENOUGH TO BE PLACED BELOW SUCH FOOTINGS/GRADE BEAMS. FOOTINGS/GRADE BEAMS PARALLEL TO PIPE RUNS SHALL BE LOWERED TO AVOID SURCHARGE ONTO THE TRENCH EXCAVATIONS.
7. ALL WATER SHALL BE REMOVED FROM FOUNDATION EXCAVATIONS PRIOR TO PLACING OF CONCRETE.
8. ALL FILLING, BACKFILLING, COMPACTING AND RECOMPACTING MUST HAVE A MINIMUM COMPACTION PERCENTAGE OF THE MAXIMUM DENSITY AS SPECIFIED IN THE SOILS REPORT.

REINFORCED CONCRETE

1. ALL PHASES OF WORK PERTAINING TO THE CONCRETE CONSTRUCTION, SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI-318-11) WITH MODIFICATIONS AS NOTED IN THE DRAWINGS OR SPECIFICATIONS.
2. CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY AND APPROVED BY A LICENSED CIVIL ENGINEER. READY MIX CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C-94. MAX. WATER/CEMENTITIOUS MATERIALS RATIO BY WEIGHT SHALL BE 0.45 AND MAX. SLUMP IS 4 INCHES.
3. SCHEDULE OF STRUCTURAL CONCRETE, 28 DAY STRENGTHS AND TYPES:

LOCATIONS OF STRUCTURE	STRENGTHS, PSI	MAX. AGGREGATE SIZE	TYPE
A. SLAB ON GRADE	4000 PSI	¾"	HARD-ROCK
B. ISOLATED PAD FOUNDATION	4000 PSI	1"	HARD-ROCK
C. GRADE BEAM	4000 PSI	1½"	HARD-ROCK
D. DRILLED PIER FOUNDATION	4500 PSI	1½"	HARD-ROCK

4. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150 TYPE II LOW ALKALI.
5. AGGREGATE FOR HARD-ROCK CONCRETE SHALL CONFORM TO ALL REQUIREMENTS AND TESTS AT ASTM C-33 AND PROJECT SPECIFICATIONS.
6. USE NON SHRINK GROUT UNDER BASE PLATES, SILL PLATES, ETC.
7. PLACEMENT OF CONCRETE SHALL CONFORM TO ACI STANDARD 301 AND PROJECT SPECIFICATIONS.

REINFORCED CONCRETE CONT:

8. CLEAR COVERAGE OF CONCRETE OVER OUTER REINFORCING BARS SHALL BE AS FOLLOWS:
- A. CAST-IN PLACE
1. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH3
2. CONCRETE EXPOSED TO EARTH OR WEATHER:
- | | |
|--|----|
| No. 6 THRU No. 18 BAR..... | 2 |
| No. 5 BAR, W31 OR D31 WIRE, & SMALLER..... | 1½ |
3. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
- | | |
|-----------------------------|----|
| No. 11 AND SMALLER..... | ¾ |
| No. 14 AND No. 18 BAR | 1½ |
9. ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE. CONTRACTOR SHALL USE TEMPLATE TO INSURE ACCURATE PLACEMENT OF ANCHOR BOLTS, DOWELS, ETC.
10. PROVIDE SLEEVES FOR PLUMBING AND ELECTRICAL OPENINGS IN CONCRETE BEFORE PLACING. DO NOT CUT ANY REINFORCING WHICH MAY CONFLICT. CORING IS NOT PERMITTED EXCEPT AS SHOWN. NOTIFY THE STRUCTURAL ENGINEER IN ADVANCE OF CONDITIONS NOT SHOWN ON THE DRAWINGS.
11. CONDUIT OR PIPE SIZE (O.D.) SHALL NOT EXCEED 30 PERCENT OF SLAB THICKNESS AND INSIDE DIAMETER NOT OVER 2", AND SHALL BE PLACED BETWEEN THE TOP AND BOTTOM REINFORCING UNLESS SPECIFICALLY DETAILED OTHERWISE. CONCENTRATIONS OF CONDUIT OR PIPES SHALL BE AVOIDED EXCEPT WHERE DETAILED OPENINGS ARE PROVIDED.
12. THE MAXIMUM SLUMP SHALL NOT EXCEED THE SLUMP PER THE MIX DESIGN THAT HAS BEEN REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER.
13. ROUGHEN SURFACE OF HORIZONTAL OR NEARLY HORIZONTAL CONSTRUCTION JOINTS SO THAT THE AGGREGATE SHALL BE EXPOSED UNIFORMLY, LEAVING NO LATANCE, LOOSENED PARTICLES OR DAMAGED CONCRETE.
14. HOT WEATHER CONCRETE SHALL COMPLY WITH ACI 318-11 5.13 AND ACI 305.1
15. COLD WEATHER CONCRETE SHALL COMPLY WITH ACI 318-11 5.12 AND ACI 306.1.
16. CONCRETE FORMWORK SHALL COMPLY WITH ACI 301 AND ACI 347-04.

REINFORCING STEEL

- 1) MATERIAL:
- a) REINFORCEMENT: ASTM A615, GRADE 60, TYPICAL
- b) ANCHOR RODS: ASTM F1554 GR.36
- c) WELDED WIRE FABRIC: ASTM A185 GALVANIZED
- 2) DETAILING, FABRICATION AND PLACING: SHALL CONFORM TO ACI SP-66 AND ACI 318.
- 3) CHAIRS, SPACERS AND SAND PLATES: AS REQUIRED TO MAINTAIN CONCRETE COVER.
- 4) SEE ELECTRICAL DRAWINGS FOR REINFORCING BAR GROUNDING REQUIREMENTS.
- 5) SPACING: CLEAR DISTANCE BETWEEN PARALLEL REINFORCEMENT IN A LAYER SHALL NOT BE LESS THAN 1-1/2 TIMES THE NOMINAL DIAMETER OF THE REINFORCEMENT, OR 1-1/3 TIMES MAXIMUM SIZE AGGREGATE, NOR LESS THAN 1-1/2".
- 6) SPLICES (STANDARD LAPS): PER BAR SPLICE SCHEDULE. STAGGER BOTTOM SPLICES AT LEAST 5'-0" FROM SPLICES IN OTHER BOTTOM REINFORCEMENT. STAGGER SPLICES FOR TOP REINFORCEMENT SIMILARLY.

POST-INSTALLED ANCHORS

- 1) POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ARCH./ENGINEER PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
- 2) APPROVED ANCHORS:
- a) EXPANSION TYPE CONCRETE ANCHORS:
1. HILTI KWIK-BOLT TZ ICC ESR#1917 (IN CONCRETE)
 2. SIMPSON "STRONG-BOLT" ICC ESR#1771
 3. SIMPSON "TITEN-HD" ICC ESR#2713 (IN CONCRETE)
 4. SIMPSON "TITEN-HD" ICC ESR#1056 (IN MASONRY)
 5. HILTI KWIK BOLT 3 (KB3) ICC ESR#1385 (IN MASONRY)
- b) ADHESIVE TYPE CONCRETE ANCHORS:
1. HILTI HIT-RE 500-SD, ICC ESR#2322 (IN CONCRETE)
 2. SIMPSON "SET-XP" ICC ESR#2508 (IN CONCRETE)
 3. HILTI HIT-HY 70, ICC ESR#2682 (IN MASONRY)
 4. SIMPSON "SET" ICC ESR#1772 (IN MASONRY)
- c) SHOT PINS:
1. HILTI X-U, ICC ESR#2269
 2. SIMPSON POWDER ACTUATED FASTENERS (ICC ESR#2138)
- d) OTHER PRODUCT WITH ICC ESR SHOWING EQUAL OR HIGHER CAPACITIES MAY BE APPROVED EQUAL.
- 3) ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION.
- 4) PROVIDE A STANDARD WASHER AND HEAVY HEX NUT WITH EACH BOLT.

MASONRY

1. CONCRETE BLOCK SHALL BE HOLLOW LOAD-BEARING CONCRETE MASONRY UNITS CONFORMING TO ASTM C-90, GRADE N TYPE I MEDIUM WEIGHT UNITS WITH A MAXIMUM MOISTURE CONTENT NOT EXCEEDING 50% TOTAL ABSORPTION, USE OPEN END UNITS.
2. CEMENT SHALL BE AS SPECIFIED FOR CONCRETE.
3. REINFORCING BARS - SEE NOTES UNDER "REINFORCING STEEL" FOR REQUIREMENTS.
4. MORTAR SHALL BE TYPE M OR S WITH PROPORTIONS (BY VOLUME) OF 4 - 1/2 PARTS SAND, 1/2 PART HYDRATED LIME, 1 PART PORTLAND CEMENT AND SHALL COMPLY WITH ASTM C-270. MORTAR M SHALL HAVE A 28 DAY STRENGTH OF 2500 PSI MINIMUM, AND MORTAR S SHALL HAVE A 28 DAY STRENGTH OF 1800 PSI MINIMUM. MORTAR COMPONENT TESTS ARE NOT REQUIRED.

MASONRY CONT:

5. GROUT PROPORTIONS SHALL COMPLY WITH THE SPECIFICATIONS, AND SHALL COMPLY WITH ASTM C-476 WITH MINIMUM 28 DAYS COMPRESSIVE STRENGTH f'c = 2000 PSI
6. PROVIDE A MINIMUM OF 1/2" CLEAR BETWEEN MAIN REINFORCING AND MASONRY UNITS.
7. ALL CELLS SHALL BE GROUTED SOLID.
8. DESIGN f'm = 1500 PSI FOR CMU CONSTRUCTION, AS PER TABLE 2105.2.2.1.2, OF THE IBC CODE.
9. LAP VERTICAL MASONRY REINF. PER MIN. LAP SPLICE LENGTH 6/SS503 EXCEPT LAP 72db AT JAMBS AND WALL END/CORNERS. U.N.O.
10. CENTER VERTICAL REINF. IN WALL U.N.O. ALL VERTICAL REINF. SHALL BE DOWELED INTO FOUNDATION WALLS OR FOOTINGS U.N.O.
11. SHOP DRAWING SUBMITTAL FOR WALL REINFORCING SHALL SHOW ALL WALL ELEVATIONS AND SHALL INCLUDE ALL WALL REINFORCING RELATED DETAILS.
12. CONSOLIDATE GROUT AT TIME OF PLACEMENT BY MECHANICAL VIBRATION AND THEN RECONSOLIDATE BEFORE PLASTICITY IS LOST. ENSURE COMPLETE FILING OF CELLS AND BONDING TO MASONRY UNITS.
13. PROVIDE CLEAN OUTS IN THE BOTTOM COURSE AT REINFORCEMENT (32 INCHES MAX) WHEN GROUT POUR EXCEEDS 5 FEET IN HEIGHT.
14. FOR GROUTING AT HORIZONTAL CONSTRUCTION JOINTS, STOP GROUT POUR 1 1/2" BELOW THE TOP OF A MORTAR JOINTS AND A MIN. OF 1/2" BELOW THE TOP OF BOND BEAMS.
15. AT REINFORCEMENT CONGESTION, USE DOUBLE OPEN END BLOCKS OR U BLOCKS TO FACILITATE CONSTRUCTION.

METAL BUILDING NOTES

1. THE BUILDING SHALL BE A PREFABRICATED METAL STRUCTURE OF THE SIZE AND CONFIGURATION SHOWN. MINIMUM WEB THICKNESS OF RIGID FRAMES SHALL BE 3/16 INCH AND THE MINIMUM FLANGE THICKNESS OF RIGID FRAMES SHALL BE 3/8 INCH.
2. THE BUILDING SHALL BE DESIGNED AND FABRICATED ACCORDING TO AISC, MBMA AND AISI LATEST SPECIFICATIONS. WHEN CONFLICTS OCCUR BETWEEN AISC, MBMA, AND AISI, THE MOST STRINGENT SHALL CONTROL. THE DIMENSIONAL TOLERANCES OUTLINED IN THE AWS CODE UNDER WORKMANSHIP AND THE TOLERANCES APPLICABLE TO ROLL FORMED STEEL UNDER THE AISC "STANDARD MILL PRACTICE" SECTION SHALL BE REQUIRED IN THE FABRICATION OF THE STEEL BUILDING FRAMES.
3. THE BUILDING FRAME SHALL BE DESIGNED TO LIMIT THE LATERAL DEFLECTION TO H/120 AT THE BUILDING EAVE FOR THE BASIC WIND SPEED & SEISMIC LATERAL LOADS DETERMINED PER THE "STRUCTURAL GENERAL NOTES" (H IS THE FRAME EAVE HEIGHT).
4. A COMPLETE DESIGN ANALYSIS SHOWING ALL CALCULATIONS FOR THE RIGID FRAMES, GIRTS, PURLINS AND X-BRACING FOR WIND AND SEISMIC LOADS AND A LAYOUT OF ANCHOR RODS AND OTHER EMBEDDED ITEMS SHALL BE SUBMITTED FOR APPROVAL WITH THE SHOP DRAWINGS. SHOP DRAWINGS SHALL INCLUDE DETAILS OF ALL MAIN MEMBERS. TYPICAL CONNECTIONS (SHOWING BOLT HOLES AND WELDS), AND ERECTION DRAWINGS. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED BEARING THE SEAL OF CIVIL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA AND EMPLOYED BY THE PRE-ENGINEERED METAL BUILDING MANUFACTURER.
5. THE BUILDING SHALL BE DESIGNED TO SUPPORT ALL MECHANICAL EQUIPMENT INCLUDING HEATERS, SPRINKLERS, EXHAUST SYSTEMS, AND ALL OTHER SUCH DEVICES. ADDITIONAL GIRTS OR PURLINS SHALL BE PLACED IN CONVENIENT LOCATIONS FOR ATTACHMENT OF ALL MECHANICAL EQUIPMENT.

LOAD COMBINATIONS PER 2012 IBC SECTION 1605 - ALLOWABLE STRESS DESIGN:

1. DL+LL
2. DL+LLr
3. DL+0.75 (LL+LLr)
4. DL+(0.6W OR 0.7E)
5. DL+0.75 (0.6W+LL+LLr)
6. DL+0.75 (0.7E+LL)
7. 0.6DL+0.6W
8. 0.6DL+0.7E

LOAD COMBINATIONS PER 2012 IBC SECTION 1605 - STRENGTH DESIGN:

1. 1.4DL
2. 1.2DL+1.6LL+0.5LLr
3. 1.2DL+1.6LLr+(f1LL OR 0.5W) WHERE f=0.5 FOR OTHER LIVE LOADS
4. 1.2DL+1.0W+f1LL+0.5LLr
5. 1.2DL+1.0E+f1LL
6. 0.9DL+1.0W
7. 0.9DL+1.0E

6. LOAD TESTS ON METAL PANEL WALLS AND ROOF MUST BE SUBMITTED WHERE PANELS ARE USED AS A DIAPHRAGM, UNLESS CROSS BRACING IS USED TO TRANSFER LATERAL LOADS.
7. WALL GIRTS SHALL BE DESIGNED TO RESIST WIND LOADS AS SPECIFIED IN DESIGN CRITERIA.
8. LATERAL DEFLECTION OF WALL GIRTS UNDER THE WIND LOADS SHALL BE LIMITED TO L/240. WALL GIRTS SHALL NOT SAG VERTICALLY UNDER THEIR OWN SELFWEIGHT MORE THAN L/240. USE SAG RODS AS NECESSARY TO LIMIT WALL GIRT VERTICAL DEFLECTION.
9. ALL ROOF MEMBERS LIVE LOAD DEFLECTION SHALL BE LIMITED TO L/360. ROOF MEMBERS TOTAL LOAD DEFLECTION SHALL BE LIMITED TO L/240.
10. ANCHOR ROD DIAMETERS AND PATTERNS SHOWN IN DRAWINGS SHALL BE VERIFIED BY MBM.
11. FOUNDATION DESIGN REACTIONS SHALL BE VERIFIED BY MBM.
12. ALL COLUMN BASES SHALL BE DESIGNED AS PIN-CONNECTED. NO FIXED BASES ARE ALLOWED. COLUMN BASE REACTIONS SHALL BE PROVIDED FOR ANCHOR BOLT AND EMBEDMENT DESIGN PER ACI 318-11 APPENDIX D.

CONSULTANTS:

ENVIRONMENTAL	HAZMAT
PAR ENVIRONMENTAL SERVICES, INC.	RGH ENVIRONMENTAL
1906 21ST STREET	2817 McGAW AVENUE
SACRAMENTO, CA 95811	IRVINE, CA 92614
(916) 739-8356	DAVID.SILVERI@TERRACON.COM
MLMANIERI@YAHOO.COM	
JGMANIERI@YAHOO.COM	



ARCHITECT/ENGINEERS:

JACOBS
Jacobs Engineering Group Inc.
Consultants in Architecture, Engineering, Planning, and the Environment
Irvine Office
2600 Michelson Drive, Suite 500
Irvine, California 92612
(949) 224-7500 Fax (949) 224-7501

Drawing Title
STRUCTURAL GENERAL NOTES

-

Approved: Project Director

-

-

Project Title
**FORT ROSECRANS NATIONAL CEMETERY
REPLACE MAINTENANCE BUILDINGS**

Project Number
892-CM3-035

Building Number

Location
**FORT ROSECRANS NATIONAL CEMETERY
CABRILLO MEMORIAL DR, SAN DIEGO, CA 92108**

Drawing Number
SS001

Date
07/18/2018

Checked
KH

Drawn
GV

Dwg. 28 of
48

NATIONAL CEMETERY
ADMINISTRATION
DESIGN AND
CONSTRUCTION
SERVICE



[illegible]

REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION

TABLE 1704.7

REQUIRED VERIFICATION AND INSPECTION OF SOILS

TABLE 1704.9

REQUIRED VERIFICATION AND INSPECTION OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS

TABLE 1704.5.1

LEVEL 1 REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION

STRUCTURAL ABBREVIATIONS

CONSULTANTS:

HAZMAT

ARCHITECT/ENGINEERS:

Drawing Title

**STRUCTURAL SPECIAL INSPECTIONS
AND ABBREVIATIONS**

Approved: Project Director

Project Title
**FORT ROSECRANS NATIONAL CEMETERY
REPLACE MAINTENANCE BUILDINGS**

Location	FORT ROSECRANS NATIONAL CEMETERY
----------	----------------------------------

Project Number

Drawing Number

NATIONAL CEMETERY
ADMINISTRATION
DESIGN AND
CONSTRUCTION
SERVICE





HAZMAT
RGA ENVIRONMENTAL
2817 McGAU AVENUE
IRVINE, CA 92614
(949)864-2025
DAVID.SILVERI@TERRACON.COM



ARCHITECT/ENGINEERS:

JACOBS
Jacobs Engineering Group Inc.
Consultants in Architecture, Engineering,
Planning, and the Environment

Irvine Office
2600 Michelson Drive, Suite 500
Irvine, California 92612
(949) 224-7500 Fax (949) 224-7501

0 2' 4' 8' 16'

SCALE: 1/4"=1'-0"

PROJECT NORTH

Drawing Title
STRUCTURAL FOUNDATION PLAN

Approved: Project Director

Project Title

**FORT ROSECRANS NATIONAL CEMETERY
REPLACE MAINTENANCE BUILDINGS**

Location	FORT ROSECRANS NATIONAL CEMETERY CABRILLO MEMORIAL DR, SAN DIEGO, CA 92106
----------	---

Date
07/18/2018

Checked
KH

Drawn
GV

Project Number	892-CM3-035
Building Number	

Drawing Number
 2-2-1-1

Page 30 of 30



NATIONAL CEMETERY
ADMINISTRATION
DESIGN AND
CONSTRUCTION
SERVICE



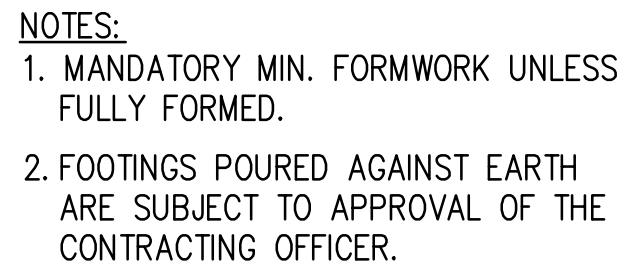
GENERAL NOTES

1. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK, AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. ALL STRUCTURAL ELEVATIONS ARE MEASURED FROM FINISHED SLAB ELEVATION OF 0'-0", WHICH IS EQUIVALENT TO FINISH SLAB ELEVATION OF 367.50' ON THE CIVIL PLANS.
3. CONTRACTOR TO VERIFY CONCRETE PAD SIZE W/ EQUIP. MANUF. TO SATISFY EDGE DISTANCE PER 3/SS502.
4. PRE-MANUF. BLDG. MANUFACTURER TO PROVIDE LATERAL SUPPORT FOR NON-BEARING CMU WALL AT THE TOP.

LEGEND

-  8" CMU WALL LOCATION PER ARCH. DWGS.
 2" DEPRESSED SLAB PER DETAIL 2/SS501.
 GB# DENOTES GRADE BEAM PER SCHEDULE 11/SS502.

1 STORAGE BUILDING FOUNDATION PLAN
SCALE 1/4" = 1'-0"



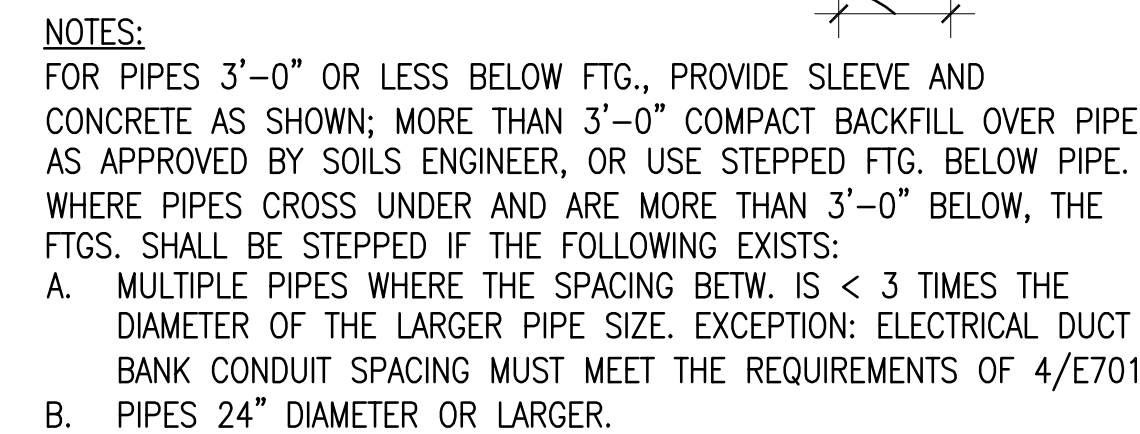
REINFORCED CONCRETE											f'c (psi) @ 28 DAYS
REINF LOCATION	REINFORCEMENT SIZE										
	#3	#4	#5	#6	#7	#8	#9	#10	#11		
TOP	24	33	40	49	71	81	91	102	113	4000	
OTHER	19	25	31	37	54	62	70	79	87		

USE WELDED SPLICE OR MECHANICAL CONNECTOR IF THE LAP SPLICE REINFORCEMENT DOES NOT HAVE A MINIMUM SPACING $3d_b$ + 1/8 INCHES AND A MINIMUM COVER OF d_b + 1/8 INCHES

Diagram illustrating the required lap splice length for reinforcement bars. The lap splice length is specified as $3d_b + 1/8$ MIN. The diagram also shows the main bar and splice bar separately.

MECHANICAL CONNECTORS
MECHANICAL CONNECTORS SHALL BE TENSION-COMPRESSION TYPE WITH THE ABILITY TO DEVELOP 125 PERCENT OF THE YIELD STRENGTH FOR THE SPLICED REINFORCEMENT (75 KSI). ALSO, MECHANICAL CONNECTORS SHALL HAVE AND BE INSTALLED PER AN EVALUATION REPORT FROM ICBO EVALUATION SERVICE, INC.

R LAP & SPLICE & DEVELOPMENT LENGTH SCHED



CL SUPPORT

.33L1

.33L2

ADDED TOP BARS
PER PLAN, SEE NOTE 2

LAP PER SCHED.
SEE NOTE 2

CL

ADDED BOTTOM
BARS PER PLAN, SEE NOTE 2

0.125L2

6" 6"

GRADE BEAM & PILE CAP PER PLAN,
REINF. NOT SHOWN FOR CLARITY

L2

10 STRUCTURAL SLAB DETAIL
SCALE N.T.S.

CONSULTANTS:	
<u>ENVIRONMENTAL</u> PAR ENVIRONMENTAL SERVICES, INC. 1906 21ST STREET SACRAMENTO, CA 95811 (916) 739-8356 MLMANIERY@YAHOO.COM JGMANIERY@YAHOO.COM	<u>HAZMAT</u> RGA ENVIRONMENTAL 2817 MCCAW AVENUE IRVINE, CA 92614 (949)864-2025 DAVID.SILVERI@TERRACON.COM

HAZMAT
RGA ENVIRONMENTAL
2817 McGAW AVENUE
IRVINE, CA 92614
(949)864-2025
DAVID.SILVERI@TERRACON.COM



Approved: Project Director

Location			FORT ROSECRANS NATIONAL CEMETERY CABRILLO MEMORIAL DR, SAN DIEGO, CA 92161		
Date	Checked	Drawn			
07/18/2018	KH	GV			

Drawing Number
SS501
Dwg 31 of

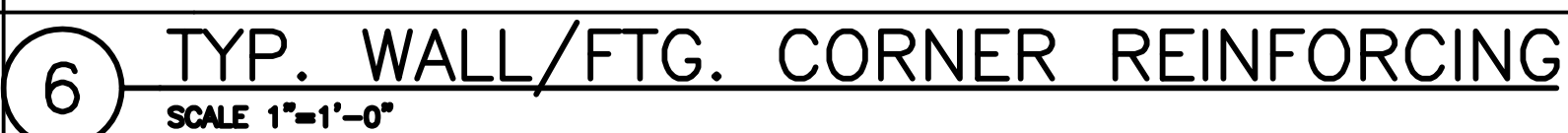


Department of
Veterans Affairs

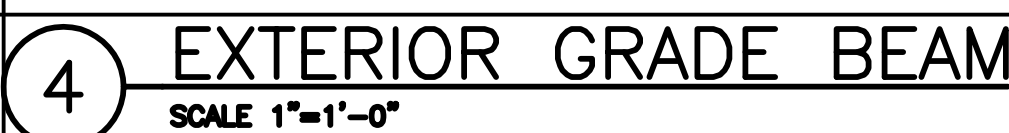
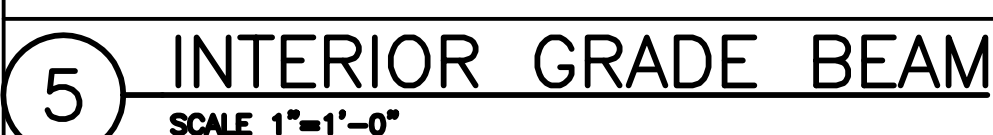
Diagram illustrating a trench excavation cross-section. The diagram shows a footing on the left, a trench excavation, and backfill material. Key dimensions and labels include:

- FOOTING**: The base structure on the left.
- 10'-0" MIN.**: The minimum width of the backfill area above the footing.
- 1'-6" MIN.**: The minimum width of the trench excavation at the bottom.
- BACKFILL PER SPECS AND SOIL REPORT (90% MIN. DENSITY)**: The material filling the trench.
- GROUND LINE**: The surface level.
- TRENCH EXCAV**: The excavation area.
- 1:2**: The slope ratio of the trench walls.
- BOTTOM OF TRENCH**: The lowest point of the excavation.
- EXCAVATION SHALL NOT EXTEND BELOW THIS LINE**: A note indicating the maximum depth of excavation.

NOTES:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING, SHEATHING, OR OTHERWISE MAINTAINING THE SIDES OF THE EXCAVATION FROM CAVE-INS UNTIL ALL BACKFILL IS COMPLETED PER SPECIFICATIONS AND SOIL REPORT.



11 GRADE BEAM SCHEDULE



1 HAIR PIN DETAIL
SCALE 1"=1'-0"

CONSULTANTS:

HAZMAT

ARCHITECT/ENGINEERS:

JACOBS

	Drawing Title
--	---------------

TYPICAL CONCRETE DETAILS

Approved: Project Director

Project Title

Project Number

Building Number

Drawing Number

Drawn
GV

SS502
Due 22, 2011

Due 22 of

NATIONAL CEMETERY
ADMINISTRATION
DESIGN AND
CONSTRUCTION
SERVICE



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

12 DETAIL
SCALE 1"=1'-0"

9 DETAIL
SCALE 1"=1'-0"

6 MASONRY LAP SPLICE
SCALE 1"=1'-0"

3 TYP. CMU CORNER/INTERSECTION DETAIL
SCALE 1"=1'-0"

11 DETAIL
SCALE 1"=1'-0"

8 DETAIL
SCALE 1"=1'-0"

5 FENCE POST IN CMU WALL
SCALE 1"=1'-0"

2 TYP. CMU CONTROL JOINT DETAIL
SCALE 1"=1'-0"

10 DETAIL
SCALE 1"=1'-0"

7 DETAIL
SCALE 1"=1'-0"

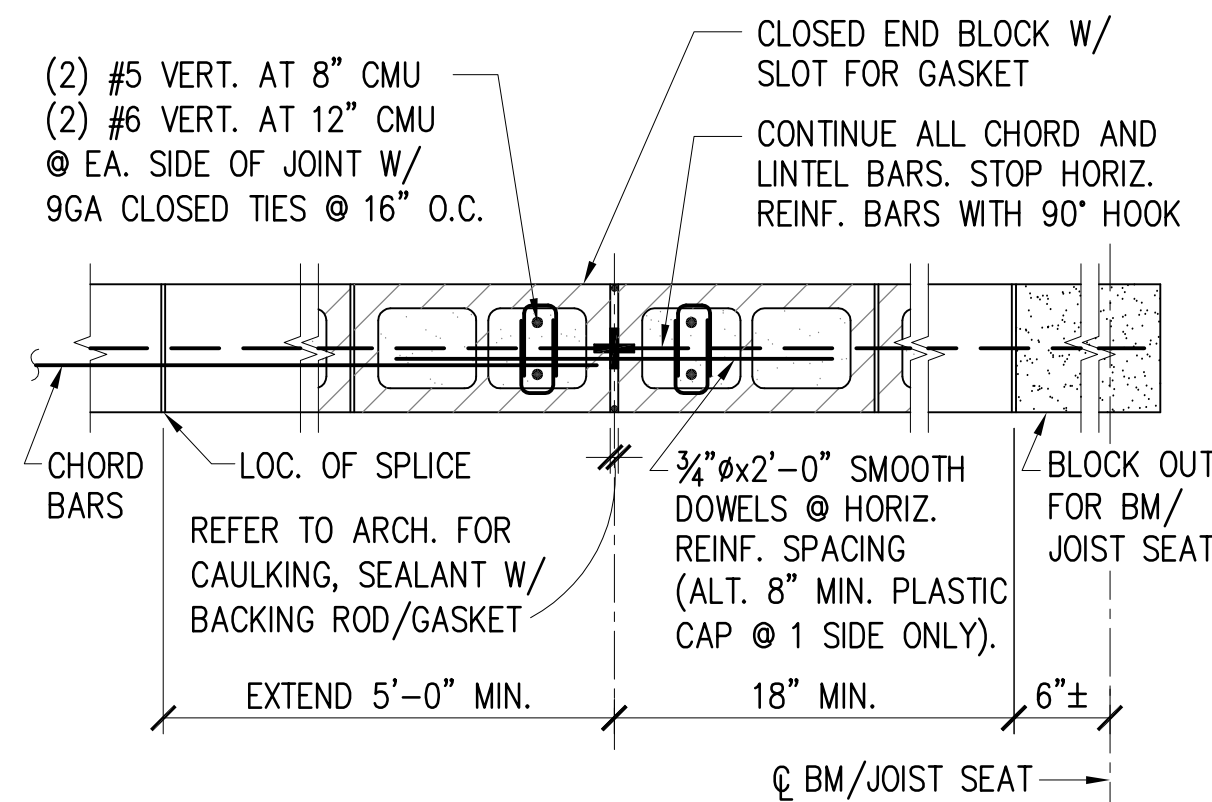
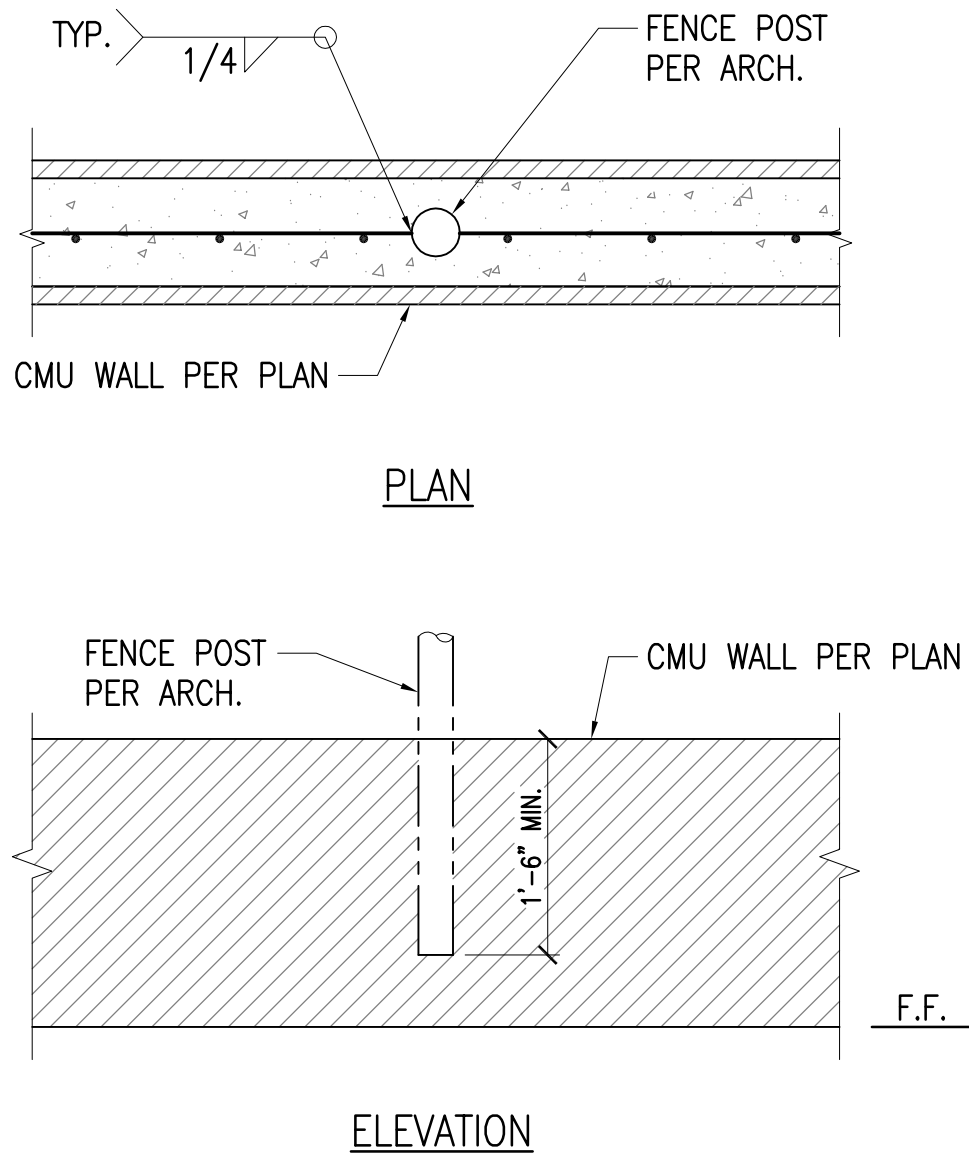
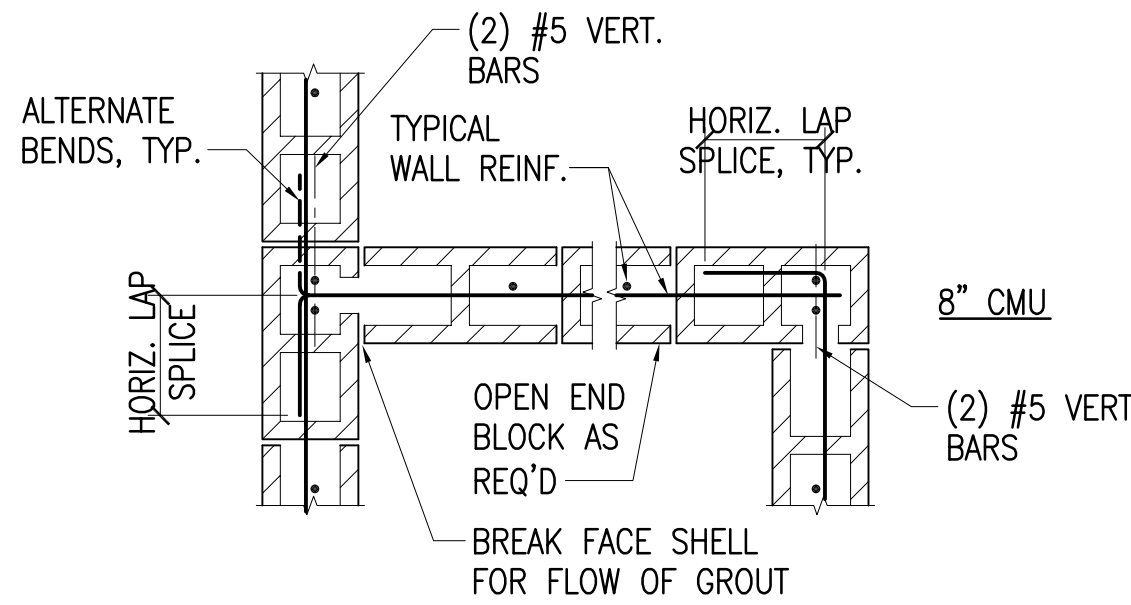
4 DETAIL
SCALE 1"=1'-0"

1 DET. OF REBARS AT WALL OPNG. OR PIPE PENETRATION
SCALE 1"=1'-0"

MASONRY LAP SPLICE LENGTHS (INCHES)	
BAR SIZE	MIN. LAP SPLICE LENGTHS (IN) 1 1/2" COVER MIN.
#3	18
#4	24
#5	30
#6	36
#7	42
#8	48
#9	55

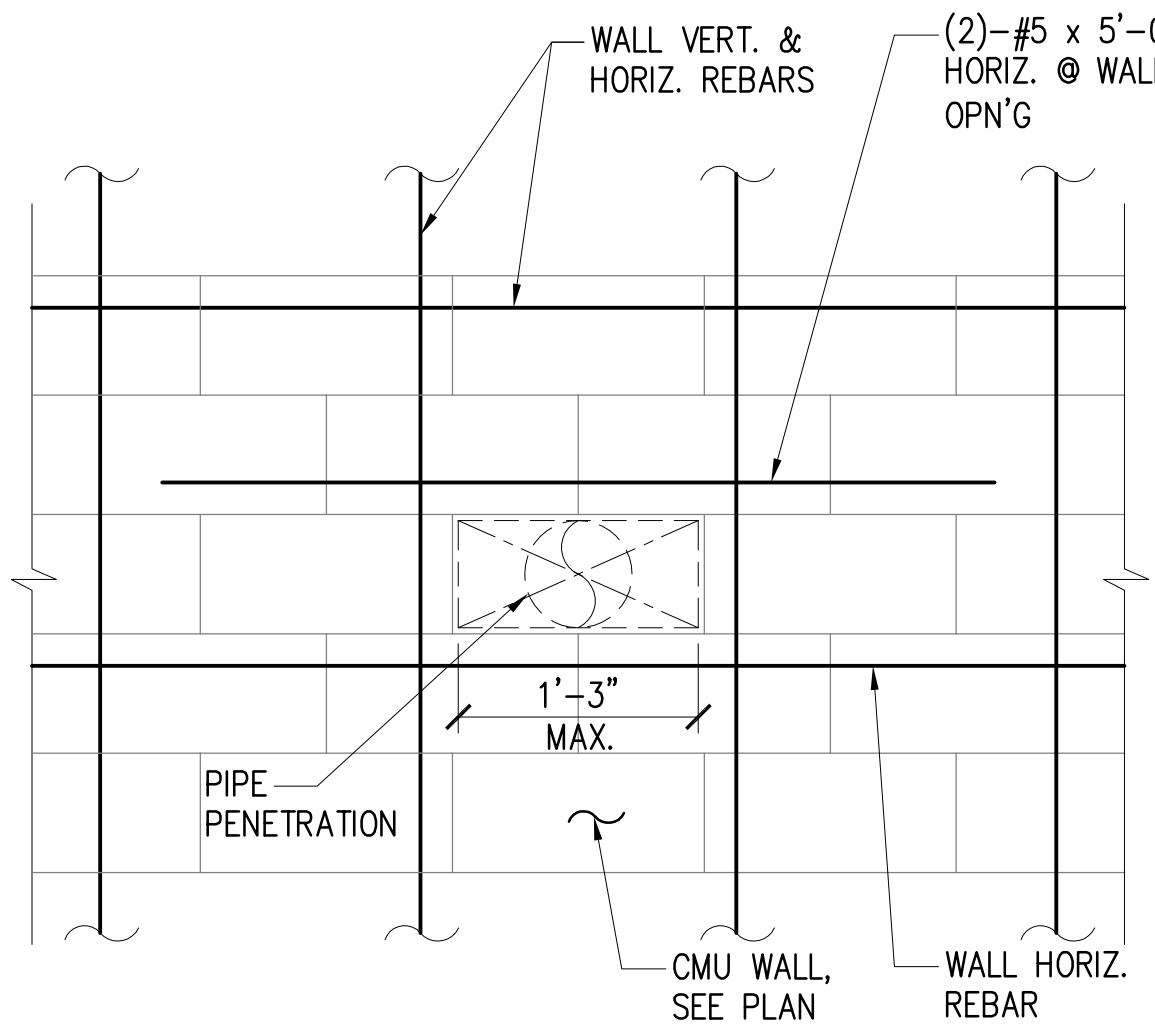
NOTES:

1. UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE CONTRACT DRAWINGS, USE THE TABULATED MINIMUM LAP SPLICE LENGTH ABOVE.
2. LAPS SPLICE LENGTHS TABULATED ABOVE ARE FOR UNCONFINED LAPS ONLY, FOR CONFINED LAP SPLICE LENGTH, SEE NCMA TEK 12-6A.
3. USE 60 KSI REINFORCING BARS, U.N.O.



NOTES:

1. HORIZONTAL REINF. AT ROOF LINES SHALL BE CONTINUOUS THRU JOINT.
2. SAWCUT BLOCK AS REQ'D.
3. MAINTAIN 4'-0" CLEAR FROM CONTROL JOINT TO OPENINGS AND COLUMNS.
4. SPACE CONTROL JOINTS APPROXIMATELY 30'-0" O.C., 40'-0" MAX. COORDINATE WITH ARCH. PLANS. DO NOT LOCATE OVER WALL OPENINGS.
5. STEEL LEDGER ANGLES STOP AT CONTROL JOINT.



CONSULTANTS:

ENVIRONMENTAL
PAR ENVIRONMENTAL
SERVICES, INC.
1906 21ST STREET
SACRAMENTO, CA 95811
(916) 739-8356
MLMANIER@YAHOO.COM
JGMANIER@YAHOO.COM

HAZMAT
RGA ENVIRONMENTAL
2817 MCGAW AVENUE
IRVINE, CA 92614
(949) 864-2025
DAVID.SILVER@TERRACON.COM



ARCHITECT/ENGINEERS:

JACOBS
Jacobs Engineering Group Inc.
Consultants in Architecture, Engineering,
Planning, and the Environment
Irvine Office
2600 Michelson Drive, Suite 500
Irvine, California 92612
(949) 224-7500 Fax (949) 224-7501

Drawing Title

TYPICAL CMU DETAILS

Approved: Project Director

-

-

Project Title

FORT ROSECRANS NATIONAL CEMETERY
REPLACE MAINTENANCE BUILDINGS

Location

FORT ROSECRANS NATIONAL CEMETERY
CABRILLO MEMORIAL DR, SAN DIEGO, CA 92106

Date

07/18/2018

Checked

KH

Drawn

GV

Project Number

892-CM3-035

Building Number

Drawing Number

SS503

Dwg. 33 of

48

NATIONAL CEMETERY
ADMINISTRATION
DESIGN AND
CONSTRUCTION
SERVICE

