SCHEDULE OF SPECIAL INSPECTIONS/VERIFICATIONS

MATERIAL/ACTIVITY	TYPE OF INSPECTION / VERIFICATION	RESPONSIBLE PARTY	REFERENCE (*)
EARTHWORK			
Site preparation (building)	Field inspection	Special Earthwork Inspector	IBC 1704.7
Fill placement and compaction (building)	Perform material tests, observe material placement, make moisture and in-place density tests	Special Earthwork Inspector / Geotechnical Testing Laboratory	IBC 1704.7
	Review test reports	Structural Engineer-of-Record	IBC 1704.7
Foundation sub-grade	Field inspection of foundation subgrade prior to placement of concrete	Special Earthwork Inspector	IBC 1704.7
CONCRETE			
Concrete and Reinforcing Materials, Concrete Mix Designs	Review submittals of materials and concrete mix designs.	Structural Engineer-of-Record	IBC 1704.4; ACI 318 Chapters 3, 4 and 5; ACI 301 Section 4
	Verify that materials and concrete mixes supplied are in agreement with approved items.	Special Concrete Inspector	IBC 1704.4; ACI 318 Chapters 3, 4 and 5; ACI 301 Section 4; Project Specifications
Formwork	Field inspection	Special Concrete Inspector	ACI 318: Paragraphs 6.1.1 through 6.1.5
Reinforcing steel	Review of shop drawings and related submittals	Structural Engineer-of-Record	ACI 318: Paragraphs 6.1.1 through 6.1.5
	Determination of compliance with approved shop drawings/submittals and inspection of placement.	Special Concrete Inspector	ACI 318: Paragraphs 6.1.1 through 6.1.5
Concrete placing and finishing operations	Field inspection of placement and finishing	Special Concrete Inspector	IBC 1905. ACI 318: Paragraphs 5.9 and 5.10.
Concrete curing	Field inspection of curing process	Special Concrete Inspector	IBC 1905.11. ACI 318: Paragraphs 5.11, 5.12 and 5.13.
Quality assurance	Determination of concrete slump, air content and temperature; Making strength test specimens	Special Concrete Inspector / Concrete Testing Laboratory	ACI 301 Paragraph 1.6.4.2 ASTM C31
	Determination of concrete strength	Concrete Testing Laboratory	ACI 301 Paragraph 1.6.4.2; ASTM C39
	Evaluation of concrete strength	Structural Engineer-of-Record	Concrete Testing Laboratory Reports; Project Specifications

(*) Primary reference is PROJECT SPECIFICATIONS whose requirements apply to all inspections and verifications

STRUCTURAL ABBREVIATIONS

Abbreviation	Term
A.B.	Anchor Bolt
ADJ	Adjacent
A.F.F.	Above Finish Floor
APPROX	Approximate
ARCH	Architect(-ural)
BLKG	Blocking
BP	Base Plate
BM	Beam
B.O.F.	Bottom of Footing
BRG	Bearing
BTM	Bottom
BTWN	Between
C	Channel
C.I.P.	Cast-in-Place
CJ	Construction Joint
CMU	Concrete Masonry Unit
CLR	Clear
COL	Column
CONC	Concrete
CONN	Connection
CONST	Construction
CONT	Continuous
CONTR	Contractor
CTR	Center
CTRL JT	Control Joint
CSK	Countersunk
DIAG(L)	Diagonal
DIAM	Diameter
DIM	Dimension
DIST	Distance
DTL	Detail
DWG	Drawing
DWL	Dowel
EA	Each
E.B.	Expansion Bolt
E.F.	Each Face
E.J.	Expansion Joint
E.W.	Each Way
ELEC	Electrical
ELEV	Elevation
EQUIP	Equipment
EQUIV	Equivalent
EXIST	Existing
EXP	Expansion
EXT	Exterior
F.D.	Floor Drain
F.F.	Finish Floor
FIN	Finish
FLR	Floor
FNDN	Foundation

Abbreviation	Term
FRMG	Framing
F.S.	Far Side
FTG	Footing
GA	Gage
GALV	Galvanized
GLU-LAM	Glue-Laminated
GYP BD	Gypsum Board
HEM-FIR	Hemfir
HORIZ	Horizontal
HSB	High Strength Bolt
HSS	Hollow Structural Section (Tube or Pipe)
HVAC	Heating, Ventilating, and Air Conditioning
I.D.	Inside Diameter
INSUL	Insulation
INV	Invert
INT	Interior
JNT	Joint
JST	Joist
L	Angle
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
LONGIT	Longitudinal
MATL	Material
MAX	Maximum
M.B.	Machine Bolt
M.C.J.	Masonry Control Joint
MECH	Mechanical
MEZZ	Mezzanine
MK	Mark
MIN	Minimum
MISC	Miscellaneous
M.L.	Match Line
M.O.	Masonry Opening
N.I.C.	Not in Contract
NOM	Nominal
N.S.	Near Side
N.T.S.	Not to Scale
o/c	On Center
O.D.	Outside Diameter
OPNG	Opening
OPP	Opposite
P.B.	Plain Bolt
PERIM	Perimeter
PERM	Permanent
PERP	Perpendicular

Abbreviation	Term
PL	Plate
POS	Positive
PREFAB	Prefabricated
PRELIM	Preliminary
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
QTR	Quarter
R	Riser (stair)
RAD	Radius
R.D.	Roof Drain
REBAR	Reinforcing Bar
RECT	Rectangular
REF	Reference
REINF	Reinforcing
REQD	Required
REV	Revision
R.O.	Rough Opening
SHT	Sheet
SIM	Similar
SPA	Spaces(-ed)
SQ	Square
STD	Standard
STIFF	Stiffener
STL	Steel
STR	Stringer
STRUCT	Structural
SYMM	Symmetrical
T & B	Top and Bottom
TEMP	Temporary
T & G	Tongue and Groove
T.O.C.	Top of Concrete
T.O.P.	Top of Parapet
T.O.S.	Top of Slab
T.O.W.	Top of Wall
TR	Tread (stair)
TRANSV	Transverse
TYP	Typical
U.O.N.	Unless Otherwise Noted
VERT	Vertical
VOL	Volume
w/	With
W	Wide Flange
w/o	Without
WP	Working Point
WWF	Welded Wire Fabric

STRUCTURAL DESIGN CRITERIA

BUILDING CODE

New Mexico Commercial Building Code, 2006 edition

OCCUPANCY CATEGORY

III: Schools with occupant load greater than 250

VERTICAL LOADS

Use or Occupancy	Dead Load (1)	Live Load (1)
Roof (2)	30 psf	20 psf
Floors and Stairs on Grade	50 psf	100 psf

Notes:

(1) Uniform load to be applied over the full tributary area of each structural member.

(2) See Framing Plans for concentrated loads from mechanical units, hoists and other equipment.

DESIGN SOIL BEARING PRESSURES

Maximum Vertical Pressures

Building footings supported on engineered fill

Full gravity loads	2000 psf
Combined gravity and short-term lateral wind and seismic) loads	2666 psf

Lateral Pressures

Active	35 psf/ft
Passive	350 psf/ft
At Rest	55 psf/ft
Coefficient of Friction	0.40

SEISMIC DESIGN CRITERIA

S_S	43.4%
S_1	14.0%
Seismic Importance Factor, I	1.25
Site Class	D
Building height, hn	20 ft
Seismic Numerical Coefficients	
Fa	1.45
Fv	2.24
Seismic Use Group	II
Seismic Design Category	D
Response Modification Factor (R)	2

WIND DESIGN CRITERIA

Basic wind speed (3 sec gust)	90 mph
Exposure Category	C
Importance factor, Iw	1.15
Mean roof height	20 feet
Adjustment Factor for Building Height and Exposure (λ)	1.29
Simplified Design Wind Pressure	P_{S30}
Net Design Wind Pressure	P_{NET30}

Main Wind Force-Resisting system
Design wind pressure

$P = \lambda\ I_w\ P_{S30}$
$P = 1.39\ P_{S30}$

Components and Cladding
Design wind pressure

$P = \lambda\ I_w\ P_{NET30}$
$P = 1.39\ P_{NET30}$

STRUCTURAL MATERIALS

CONCRETE

Cement: ASTM C150, type ILA or IILA
Fly Ash: ASTM C618, class as required by properties of aggregates
Aggregate: ASTM C33
Admixtures: As approved. Do not use any admixtures containing chlorides.
Entrained air: 4% to 7% by volume in exterior exposed concrete
Nominal unit weight: 145 pcf
Compressive strength (average of strengths of 3 standard 4" diameter x 8" cylinders at 28 days):

USE	REQUIRED STRENGTH
Footings, Stem walls, Topping Slabs	3000 psi
Slabs-on-grade, Sitework	4000 psi

CONCRETE REINFORCING
Bars: ASTM A615, deformed, grade 60
Fiber reinforcing: Virgin polypropylene specifically manufactured for use in concrete.

STRUCTURAL AND MISCELLANEOUS STEEL
Wide flange members: ASTM A992; Fy = 50,000 psi
Channels, Angles, Plates and Bars:
ASTM A36, Fy = 36,000 psi
Structural tubing: ASTM A500, grade B, Fy = 46,000 psi
Pipe: ASTM A53, type E or S, grade B, Fy = 35,000 psi

COLD-FORMED STRUCTURAL STEEL FRAMING (See General Notes - Cold-Formed Steel on Framing Detail Sheet for required section properties)
16 gage and heavier members: ASTM A570 or A607;
Fy = 50,000 psi
18 gage and lighter members: ASTM A611;
Fy = 33,000 psi

BOLTS AND NUTS
Steel-to-Steel Connections
Bolts: ASTM A325, type One, tension control
Nuts: ASTM A563, grade C, heavy hexagonal
Other
Bolts: ASTM A307, grade A, hexagonal heads
Nuts: ASTM A563, grade A, hexagonal

DIMENSION LUMBER
Structural Framing
Douglas Fir-Larch #1 and better

Bending:	Fb	=	1,200 psi
Shear:	Fv	=	180 psi
Compression perpendicular to grain:	Fcp	=	625 psi
Compression parallel to grain:	Fc	=	1,550 psi
Modulus of Elasticity:	E	=	1,800,000 psi

STRUCTURAL GLUED-LAMINATED TIMBER
Douglas Fir-Larch, Appearance grade

Bending:	Fb	=	2,200 psi
Shear:	Fv	=	230 psi
Compression perpendicular to grain:	Fcp	=	590 psi
Compression parallel to grain:	Fc	=	2,100 psi
Modulus of Elasticity:	E	=	1,900,000 psi

GENERAL REQUIREMENTS

1. VERIFICATION. Verify all dimensions, elevations and site conditions before beginning work. Notify Resident Engineer of any discrepancies. Beginning of work, or any succeeding phase of work, shall be considered to be the Contractor's certification that he has examined all conditions under which work is to be done and that he has found all conditions to be satisfactory.
2. CONFLICTS. If there are conflicts between different parts of the drawings or between the Drawings and the Specifications, or if the Contractor has any questions about the design documents, he shall issue a Request for Information (RFI) to the Resident Engineer requesting clarification. Work in the area in question shall not proceed until RFI has been answered.
3. COORDINATION. The Contractor shall coordinate the activities of all construction personnel, including any subcontractors, to ensure that construction is in accordance with the Contract Documents plus any approved change orders or modifications resulting from Requests for Information (RFI). Errors in construction resulting from failures of coordination shall be corrected by the Contractor at his expense subject to approval by the Resident Engineer.
4. SUBSTITUTIONS. Do not make any substitutions without prior written approval. Provide manufacturer's approved product evaluation reports (ICC ES reports) and a list of all proposed substitutions to Resident Engineer for review prior to installation / fabrication.
5. SIMILAR WORK. Where construction details are not shown or noted for any part of the work, prepare and submit a Request for Information (RFI) to the Contracting Officer requesting instructions on how to proceed. Do not continue work in the area effected until a response to the RFI has been received.
6. PIPES, DUCTS, SLEEVES, CHASES, etc. Do not place pipes, ducts, sleeves, chases or any similar items in slabs, beams, walls or other structural elements without prior written approval. Do not cut any structural elements for installation of any item without prior written approval from the Resident Engineer.
7. PROTECTION OF EXISTING CONSTRUCTION. Take all measures necessary to protect existing construction adjacent to new construction. Locate and protect underground or concealed conduit, plumbing or other utilities where new work is being performed. Repair as directed by the Resident Engineer any utilities which were previously damaged or which are damaged during the course of construction of this project.
8. CONSTRUCTION LOADS. Distribute materials placed on roofs or framed floors evenly. Do not exceed the allowable loading for supporting members and their connections.
9. CONSTRUCTION METHODS AND PRODUCT SAFETY. Except where specifically noted otherwise, 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. Design, construct and maintain all safety devices, including shoring and bracing. Conform to and enforce all local, state and federal health standards, laws and regulations.
10. SUBMITTALS AND REVIEW OF SUBMITTALS. Schedule work and make submittals to allow adequate time for the review of submittals. Review all submittals before transmitting them to the Resident Engineer. Submittals which have not been reviewed by the Contractor before being transmitted to the Resident Engineer will be returned to the Contractor without review.
11. CHANGES TO THE STRUCTURAL DRAWINGS. Not permitted without prior written approval from the Resident Engineer.

STRUCTURAL DESIGN STANDARDS / REFERENCES

GENERAL:
Minimum Design Loads for Buildings and Other Structures (ASCE/SEI 7-10), American Society of Civil Engineers/Structural Engineering Institute, 2010

EARTHWORK:
Subsurface Investigation Report
Proposed Fort Bayard National Cemetery Expansion
Ft. Bayard, New Mexico
April 10, 2009

CONCRETE:
Building Code Requirements for Structural Concrete (ACI 318-11), American Concrete Institute, 2011

STRUCTURAL STEEL:
Specification for Structural Steel Buildings, American Institute of Steel Construction (AISC), 2010

STRUCTURAL STEEL CONNECTIONS:
Bolted: Specification for Structural Joints Using ASTM A325 or A490 Bolts; Research Council on Structural Connections (RCSC); June 30, 2004
Welded: Structural Welding Code - Steel (AWS D1.1), American Welding Society (AWS), 2008

GLUED-LAMINATED WOOD MEMBERS
Timber Construction Manual, Fifth edition, American Institute of Timber Construction (AITC), 2005

DIMENSION LUMBER
National Design Specification for Wood Construction, ANSI/AF&PA NDS-2005

PLYWOOD, OSB
Diaphragms and Shear Walls Design/Construction Guide; APA - The Engineered Wood Association (APA); 2007

DISCOVERY CLAUSE

IN THE EVENT THAT BONES OR PREHISTORIC OR HISTORIC ARCHAEOLOGICAL MATERIALS ARE UNCOVERED DURING CONSTRUCTION OR EARTH DISTURBING ACTIVITIES, CEASE WORK IMMEDIATELY AND PROTECT THE REMAINS FROM FURTHER DISTURBANCE. NOTIFY THE OWNER (THE DIRECTOR OF FORT BLISS NATIONAL CEMETERY) AT (915) 564-0201. THE OWNER WILL CONTACT THE NEW MEXICO HISTORIC PRESERVATION DIVISION (SHPO). THE OWNER AND SHPO MAY DISCUSS THE APPROPRIATE WAY TO PROCEED. DIRECTION TO THE CONTRACTOR WILL BE PROVIDED BY THE OWNER.

Revisions: | Date

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Drawing Title: COMMITTAL SHELTER STRUCTURAL DESIGN DATA
Approved: Director Office of Construction Management

Project Title: CEMETERY IMPROVEMENTS AND NEW MAINTENANCE BUILDING
Location: FORT BAYARD, NEW MEXICO
Date: NOVEMBER 18, 2011 | Checked: CEB | Drawn: BCE

Project Number: 885CM3007
Building Number: 3
Drawing Number: S-021
Dwg 114 of 120

100% CONSTRUCTION DRAWINGS

NATIONAL CEMETERY ADMINISTRATION OFFICE OF DESIGN AND CONSTRUCTION
Department of Veterans Affairs

VA FORM 08-6231, OCT 1978

DWG SCALE: 1/4" = 1'-0"
10/20/2011
BCE2010-011/S-021