GENERAL NOTES

I. CODES AND SPECIFICATIONS

A. GENERAL BUILDING CODE
1. International Building Code.

B. CONCRETE CODES
1. ACI 318, American Concrete Institute Building Code.
2. ACI 301, Specifications for Structural Concrete for Buildings.
3. CRSI - Manual of Standard Practice.
4. AWS D1.4, Structural Welding Code - Reinforcing Steel.

C. STRUCTURAL STEEL CODES
1. AISC - Load and Resistance Factor Design, Thirteenth Edition.
2. ANSI/AWS D1.1, American Welding Society - Steel.
3. Standard Practice for Steel Buildings and Bridges.
4. Structural Joints Using ASTM A 325 and A 490 Bolts as approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.

D. MASONRY CODES
1. ACI 530 / ASCE 5
2. ACI 530.1 / ASCE 6, Specification for Masonry Structures.

E. COLD FORMED STEEL (LIGHT GAGE METAL) CODE
1. American Iron and Steel Institute (AISI) "Specification for the Design of Cold Formed Steel Structural Members", Latest Edition.

F. CONFLICTS IN STRUCTURAL REQUIREMENTS
1. Where conflicts exists between the various publications as specified herein, the strictest requirements of the various publications shall govern unless noted otherwise. Where conflict exists among the various parts of the Structural Contract Documents, (Structural Drawings, General Notes, Specifications) the strictest requirements shall govern.

All Codes and Specifications listed above shall include all amendments and addenda in force at the date of the contract documents.

II. TYPICAL DETAILS

A. Details labeled "Typical Details" on the Drawings shall apply to all situations on the Project that are the same or similar to those specifically detailed. Such details shall apply whether or not they are keyed in at each location. Questions regarding applicability of typical details shall be determined by the Engineer.

III. DESIGN CRITERIA

A. DEAD LOADS
1. Dead loads. Dead load materials assumed in the design are shown on the Architectural and Structural Drawings. Any changes in construction materials from those shown on the Architectural or Structural Drawings shall be reported by the General Contractor to the Structural Engineer for verification of load carrying capacity of the structure.

B. LIVE LOADS

CATEGORY	UNIFORM LOAD (PSF)	CONCENTRATED LOAD (#)
Roof	20	N/A
Office Floors	100	2000

Live loads have been reduced on any member based on the Code cited in CODES AND SPECIFICATIONS, Paragraph I. A.

C. WIND LOADS
1. Wind pressure based on the requirements of Code cited in CODES AND SPECIFICATIONS, Paragraph I. A.
2. V = 90 mph, Exposure: B.

IV. FOUNDATION - GENERAL

A. GEOTECHNICAL REPORT
Foundation design is based on the following geotechnical report:
Proposed VA Campus Additions Buildings 10 and 11
Prepared by: Terracon Consulatants, Inc.
Report No. 96095120
Dated: December 4, 2009

All recommendations therein that relate to the work shown on these drawings shall be followed.

B. FOUNDATION APPROVAL AND INSPECTION BY AUTHORIZED INSPECTOR
1. Unless authorized otherwise by the Owner or Architect, the General Contractor shall notify the Geotechnical Engineer or other authorized inspector for review of foundation bearing surface, inspection of foundation installation, and foundation installation methods (including construction dewatering methods where required)and shall not place concrete prior to inspector's approval.

C. GRADE BEAMS
1. Grade Beam Side Forms.
   a. Form exposed faces of grade beams.
2. Grade beam bottom steel shall be chaired at 5 foot maximum centers using beam bolsters providing 3 inch bottom cover to reinforcing steel. Beam bolsters used shall be intended for support on soil.
3. Bottom bars of grade beam shall be spliced (where required) at the piers only. Top bars shall be spliced (where required) at the midspan of the grade beams. Lap length shall be 36 times bar diameter unless specified otherwise. Provide corner bars to match top and bottom steel.
4. Void forms under grade beams shall be capable of supporting the wet weight of concrete over it.

E. SLAB-ON-GRADE CONSTRUCTION
1. Slab on grade construction shall follow the recommendations of Guide for Concrete Floor and Slab Construction ACI 302.1R and ACI 302.2R.
2. Subgrade Preparation shall conform to the soils report noted above. If report does not specify the amount of select fill, provide fill as required above to reduce PVR to 1 inch.

F. VAPOR RETARDER
1. Vapor retarder shall: have no more than 0.01 perms when tested in accordance with ASTM E-96; meet or exceed the requirements of ASTM E-1745, Class A; (U.N.O.) in accordance with ACI 302.2R. Acceptable products include:
   a. Stego Wrap, 15 mils, by Stego Industries LLC
   b. Approved equal conforming to performance requirements
2. All seams shall be overlapped a minimum of 6 inches and taped with polyethylene tape. All penetrations, block-outs, and openings shall be sealed using a combination of the vapor retarder and polyethylene tape.

V. DRILLED PIER FOUNDATION

A. DESIGN SOIL PRESSURES
Allowable Pressure = 40,000 psf under sustained loads

B. FIELD INSPECTION OF BEARING STRATUM
1. The bearing stratum of each drilled pier shall be inspected and approved by the Geotechnical Engineer or other authorized inspector prior to pouring of concrete.
2. The bottom elevation of piers is shown on the Drawings. The actual required bearing elevation may vary as required to provide proper capacity as determined by the geotechnical engineer. Footings shall be poured immediately after excavation.

C. BEARING ELEVATION
1. The bottom elevation of piers is shown on the drawings for bid purposes. The actual required bearing elevation may vary as required to provide proper capacity as determined by the Geotechnical Engineer.

D. TEMPLATES
1. Provide and install templates to accurately set vertical pier reinforcing steel, and anchor bolts for steel columns.
2. Submit details with pier reinforcing steel shop drawings.

E. PIER CAPS AND WIDENED GRADE BEAMS
1. Refer to Drawings for requirements at pier caps and widened grade beams.

VI. CONCRETE

A. CLASSES OF CONCRETE
1. All concrete shall conform to the requirements as specified in the table below unless noted otherwise on the Drawings:

USAGE	28 DAY COMP. CONC. STRENGTH (PSI)	TYPE	MAX. SIZE AGGREGATE
Grade Beams	3000	NW	1 1/2"
Slab-on-grade	3000	NW	1 1/2"
Drilled Piers	3000	NW	1"
Metal Deck Slabs	3000	NW	3/4"
Retaining Walls	4000	NW	1"

Note: NW = Normal weight concrete
LW = Lightweight concrete slab (Density = 115 pcf max.)

2. There shall be no horizontal cold joint in any concrete pour.
3. Admixtures used shall be compatible with floor treatments.
4. All concrete shall be proportioned for a maximum allowable unit shrinkage of 0.03% at 28 days after curing in lime water as determined by ASTM C 157 (using air storage).
5. Concrete for slab-on-grade shall have a maximum water-cement ratio of 0.50.
6. Concrete shall comply with the requirements of ACI 301 and ACI 318.
7. Fly ash conforming to ASTM C618, Type F, may be used unless noted otherwise. The maximum amount of fly ash shall be 25% of the total cementitious material by weight.

B. CONCRETE MIX DESIGNS
1. Concrete mix designs must be submitted a minimum of 15 days prior to the start of the work for Engineer and Owner's testing laboratory approval prior to placement of concrete in the plant or field. Any adjustments in approved mix designs including changes in admixtures must be submitted in writing to the Engineer and Owner's testing laboratory for approval prior to use in the field.
2. Pumped Concrete: Concrete designed to be pumped shall be so noted on the mix designs and shall have mix proportions compatible with the pumping process.
3. Mix designs shall be proportioned based upon trial batching or experience as required by ACI 318.

VII. REINFORCING STEEL

A. SPECIFICATION
1. ASTM A 615 Grade 60 unless noted otherwise on the drawings. Welded Reinforcing Steel - ASTM A 706.
2. Welded Wire Fabric: Welded smooth wire fabric, ASTM A 185, yield strength 65,000 psi. Welded deformed wire fabric for, ASTM A 497, yield strength 70,000 psi. All welded wire fabric shall be furnished in flat sheets only.

B. DETAILING AND BAR SUPPORTS
1. Detailing of and bar supports for reinforcing steel shall be in accordance with the ACI Standard Details and Detailing of Concrete Reinforcement as reported by ACI Committee 315. All continuous reinforcing steel shall be lapped 36 times diameter minimum unless specified otherwise.

C. MANUAL OF CONCRETE PRACTICE
1. Unless noted otherwise, methods of estimating, detailing, fabricating, placing and contracting for reinforcing materials shall follow the Manual of Standard Practice as published by the Concrete Reinforcing Steel Institute.

D. PLACEMENT OF WELDED WIRE FABRIC
1. Welded wire fabric shall be continuous across the entire concrete surface and not be interrupted by beams or girders and properly lapped one cross wire spacing plus 2 inches.

E. REINFORCING STEEL COVERAGE
Reinforcing steel coverage should conform to the requirements specified below. The reinforcing steel detailer shall adjust reinforcing steel cage sizes at intersecting structural members as required to allow clearance for intersecting reinforcing bar layers maintaining minimum specified cover. Cover in structural members not specified below shall conform to the requirements of ACI 318 Section 7.7 unless specified otherwise on the drawings.
1. Foundation Members

a. Grade Beams	1 1/2" top, 3" bottom, 2" sides (3" sides if cast against soil)
b. Drilled Piers	3" sides
c. Interior Slab-on-Grade	1 1/2" top cover for one layer of steel (u.n.o. on contraction joint typical detail)
d. Exterior Slab-on-Grade	2" top cover
e. Basement Walls	2" dirt face, 3/4" interior face
f. Foundation Retaining Walls	2" both faces

VIII. CONCRETE FORMWORK

A. RESPONSIBILITY
1. The design, construction, and safety of all formwork shall be the responsibility of the General Contractor. All forms, shores, backshores, falsework, bracing, and other temporary supports shall be engineered to support all loads imposed including the wet weight of concrete, construction equipment, live loads, lateral loads due to wind and wet concrete imbalance. The Contractor shall also be responsible for determining when temporary supports, shores, backshores, and other bracing may be safely removed.

B. SUBMITTALS
1. The General Contractor shall submit for Owner's record only, formwork shop drawings. Formwork shop drawings shall include all items described in Paragraph A, including calculations. Formwork shop drawings shall be sealed by a registered Engineer in the state that the project is located.

IX. STRUCTURAL STEEL

A. MATERIAL
1. All hot rolled steel plates, shapes and bars shall be new steel conforming to ASTM Specification A6-84c.
2. All wide flanged sections shall conform to ASTM A992, Grade 50.
3. All tubes shall conform to ASTM A500 Grade B.
4. All connection material shall conform to ASTM A36 unless stronger required.
5. All pipe columns shall conform to ASTM A53, Grade B or ASTM A501.

B. CONNECTIONS
1. Typical connection details are indicated on the Drawings.
2. The design of all steel connections shall be performed under the direct supervision of a registered professional engineer in the state where the project is located, employed by the fabricator. Calculations sealed by the fabricator's professional engineer must be submitted if requested.
3. It is the intention of the plans and specifications that shop connections be welded or bolted and that field connections be bolted, unless detailed otherwise on the Drawings.
4. All typical beam simple connections shall be standard double angle or single angle framed beam connections. Shear tab connections may be used at locations where double angle connections are not possible. Seated beam connections shall not be used unless indicated on the Drawings. Provide full depth shear tab if beam frames on only one side of a girder.
5. Beam Reactions
   a. Non-Composite beams: Design connections to support a reaction R (unless specified otherwise) equal to one half the total uniform load capacity from the table of Uniform Load Constants in the AISC Manual.
   b. Composite beams: Support a reaction R (unless specified otherwise) equal to a multiplier, defined below, times one-half the total uniform load capacity from the table of Uniform Load Constant.

Beam Size	Multiplier	Beam Size	Multiplier
W8	2.75	W21	1.75
W10	2.55	W24	1.70
W12	2.35	W30	1.50
W14	2.00	W33	1.45
W16	1.90	W36	1.40
W18	1.85		

Add to the reaction listed above, any loads or reactions of members supported by the beam within three feet of beam end and the vertical components of forces in brace members framing into the beams.
6. Bracing connections shall develop full tensile forces at each end of the bracing member unless bracing forces are specified on the Drawings.
7. MC = Moment Connections
8. Welds:
   a. All welds shall conform to the American Welding Society (AWS) standards.
   b. All welding shall be performed by a welder certified in accordance to the AWS standards.
9. Bolts:
   a. All bolts shall conform to ASTM A325 Type 1, High Strength Bolts. All bolts shall be designed as bearing bolts with threads included in the shear plane. Minimum bolt diameter shall be 3/4 inch. All bolts shall be tightened to a snug-tight position, unless noted below.
   b. All bolts at braces and moment connections shall be tightened using load indicating washers or tension bolts.
   c. All bolts shall be new and shall not be re-used.
10. Steel-to-Aluminum Connections
   a. Provide Neoprene washers to fully separate aluminum and steel materials. Use only stainless steel fasteners with complete separation of steel from aluminum.

C. GALVANIZING
1. All steel exposed to weather or outside the building's waterproofing, such as brick shelf angles, shall be hot-dipped galvanized after fabrication.
2. All steel surfaces to be hot dip galvanized shall be prepared as specified by the Steel Structures Painting Council (SSPC).
3. The zinc coating for steel shapes and plates shall average not less than 2.3 oz. with no individual thickness less than 2.0 oz.
4. Galvanize all nuts, bolts, and washers used in the connection of galvanized steel.
5. Protect all field welded connections with "Z.R.C. Cold Galvanizing Compound" as manufactured by Z.R.C. Product Company.

D. MISCELLANEOUS - STAIRS AND HANDRAILS
1. Handrails and guardrails (including attachment to structure) shall be designed by the fabricator for the loads indicated in Chapter 16 of the Building Code. Shop drawings shall be sealed by a Professional Engineer in the state of Texas, representing the fabricator.
2. Stairs shall be designed by the fabricator for code required loads of Chapter 16. Shop drawings shall be sealed by a Professional Engineer in the State of Texas, representing the fabricator.

X. NON-SHRINK GROUT FOR BASE PLATES AND BEARING PLATES

A. TYPE
1. Grout for base plates and bearing plates shall be a non-metallic, shrinkage resistant, premixed, non-corrosive, non-staining product containing Portland cement, silica sands, shrinkage compensating agents, and fluidity improving compounds.

B. SPECIFICATIONS
1. Non-shrink grout shall conform to Corps of Engineers Specification for Non-Shrink Grout, CE-CRD-C621. Twenty-eight day compressive strength as determined by grout cube tests, shall be 5,000 PSI. Minimum thickness of grout under all base plates and bearing plates shall be 1 inch, unless specified otherwise on the drawings.

C. PLACEMENT
1. Grout shall be placed in a fluid flowable state under base plates that have a form built around them for grout confinement. Grout should be cured according to manufacturer's recommendations.

XI. STRUCTURAL BOLTS AND THREADED FASTENERS

A. SPECIFICATION
1. A325 Bolts: All bolts in structural connections shall conform to ASTM A325 Type 1, High Strength Bolts for Structural Steel Joints, unless indicated otherwise on the Drawings.

B. DESIGN
1. Minimum Bolt Diameter: Minimum bolt diameter shall be 3/4 inch.
2. Connection Type: Unless noted otherwise on the Drawings or in these General Notes, all bolted connections shall be bearing type connections using standard holes (hole diameter nominally 1/16 inch in excess of nominal bolt diameter with)threads included in the shear planes. All bolts at braces and moment connections shall be tightened using load indicating washers or tension bolts.

C. INSTALLATION
1. Fastener Tension: High strength bearing bolts shall be tightened using an impact wrench to a snug tight condition. The snug tight condition is defined as the tightness attained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. At braces and moment connections, bolts shall be tightened as required by the load indicating washers or tension bolts.

XII. WELDING OF STRUCTURAL STEEL

A. WELDER CERTIFICATION
1. All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

B. MINIMUM SIZE AND STRENGTH
1. Fillet Welds: Minimum size of fillet welds shall be as specified in the AISC Manual.
2. Partial Penetration Groove Welds: The minimum effective throat thickness of partial penetration groove welds shall be as specified in the AISC Manual.
3. Minimum Strength of Welded Connections: Unless noted otherwise on the drawings, all shop and field welds shall develop the full tensile strength of the member or elements jointed.
   a. All members with moment connections, noted on the drawings with "MC", shall be welded to develop the full flexural capacity of the member, unless noted otherwise on the Drawings.
4. Connection of all miscellaneous steel shall consist of 1/4" fillet welds all-around (minimum) if no other connection information is provided on the structural drawings.
5. At slotted connections, and anywhere a gap may exist between base metal and connecting material, weld size shall be increased to account for gap width (per AWS recommendations).

C. FILLER METAL REQUIREMENTS
1. Strength: Weld shall be as specified in the AISC Manual.
2. Electrodes. Electrodes for various welding processes shall be as specified below:
   a. SMAW: E70XX low hydrogen
   b. SAW: F7X-EXXX

D. WELDING
1. All welding shall comply with the requirements of AWS.
2. All full penetration welds shall be tested to verify compliance u.n.o..
3. All fillet welds shall be visually inspected u.n.o.

XIII. SHEAR CONNECTORS (HEADED STUDS)

A. PROPERTIES
1. Shear studs and their installation shall meet all requirements specified in Section 7 of AWS D1.1 Welding Code.
2. Stud diameter and length shall be 3/4 inch diameter X 3-7/8 inch long before welding.

B. INSTALLATION
1. Studs shall be welded in the field (not the shop) using automatically timed stud welding equipment.
2. The top flange of the beam must be unpainted and free of heavy rust, mill scale, and other foreign materials.

XIV. STEEL FLOOR DECK (COMPOSITE METAL DECK)

A. SCHEDULE
1. Provide, as specified at each location scheduled in the table below, composite metal deck with the indicated depth of deck, minimum deck thickness, concrete type, total slab thickness, and slab reinforcement.

Location	Depth of Deck	Min. Deck Thk.	Concrete Type	Total Slab Thk.	Slab Reinforcing	Design Superimposed Load
Typ floor	2	20 ga.	NW	4 ½	#3@15" o.c.e.w.	See Sec. III

LW = Light-weight Concrete
NW = Normal-weight Concrete

2. The average rib width to depth of deck ratio shall be greater than or equal to 2.0.
3. The deck thickness specified above shall be considered the minimum thickness. The deck manufacturer shall be responsible to select the required deck thickness, if greater than shown in the table above, to carry the design superimposed load indicated for the spans shown on the drawings and meeting all performance criteria as specified by the Steel Deck Institute.

B. SPECIFICATION
1. The design, fabrication, and erection of all floor deck shall conform to the Steel Deck Institute Design Manual for Composite Decks, Form Decks, and Roof Decks as published by the Steel Deck Institute (SDI).

C. GRADE OF STEEL
1. Steel deck shall be manufactured from steel conforming to ASTM A 611 Grades C and D, for painted deck or ASTM A 653-94, structural quality for galvanized deck or Engineer approved equal, having a minimum yield strength of 40,000 psi.

D. FINISH
1. Galvanizing: Steel deck shall be galvanized with a protective zinc coating conforming to ASTM A 653-94 G60 class.

E. ATTACHMENT
1. Floor deck units shall be welded to each structural support member using 5/8 inch diameter puddle welds at each end of sheet and each intermediate support beginning at edge rib and at a maximum spacing of 12 inch centers. Weld metal shall penetrate all layers of deck material at end laps and side joints and shall have good fusion to the supporting members. Welding washers shall be used when welding steel deck less than 0.028 inches thick.
2. Side laps of adjacent units shall be fastened by sheet metal screws so that spacing between supports and fasteners does not exceed 36 inches.
3. Provide a minimum end bearing of 1-1/2 inches over supports.
4. End laps of sheets shall be minimum of 2 inches and shall occur over supports.

F. DECK SPANS
1. Metal deck spans shall not exceed the maximum center to center spans as required by SDI criteria. Where possible, all metal deck shall extend over three or more supports. Two span deck shall be used only where deck layout does not permit the use of three spans. Single span deck is not permitted. All deck shall be designed as unshored construction unless noted otherwise.

G. CHLORIDE ADMIXTURES
1. The use of admixtures in concrete containing chloride salts shall not be permitted for metal deck concrete.

H. EXTRA CONCRETE REQUIRED BY DECK DEFLECTION
1. The General Contractor shall include in his bid additional concrete required for metal deck slabs to account for deck deflection.

I. OPENINGS IN METAL DECK SLAB
1. For all openings in metal deck not framed with structural steel and greater than 10 inches in width in either direction, provide 2 - # 5 x opening width plus 2'-0" in a direction perpendicular to deck ribs each side of opening with bars bearing to deck ribs each side of opening with bars bearing on top of ribs and 2 - # 5 x deck span plus 1'-0" each side of opening chaired 3/4" up from bottom of nearest deck rib running beside the opening from support to support unless heavier reinforcement is indicated on the drawings. Provide blockout in slab for opening with deck uncut. Cut deck at opening after concrete has reached 75% of its design strength.

J. SHEET METAL CLOSURES
1. Metal deck manufacturer shall furnish sheet metal closures at all slab edges, columns, walls, and openings unless steel angles or plates are specified in details on the drawings. Such closures shall be minimum 14 gage cold formed steel welded to edge supports with 1 inch long weld at 12" maximum centers. Provide 2" minimum bearing over steel support. Closures and support welds shall be designed to support the wet concrete weight and a 150 pound concentrated load acting at the slab edge without exceeding a stress of 0.8 Fy; and the wet concrete weight alone without exceeding a stress of 0.6 Fy and a deflection of 3/4" maximum. Provide sheet metal closures for open ends of panels where deck stops or changes direction.

Revisions:	Date
SCHEMATIC DESIGN SUBMISSION	08/02/10
DESIGN DEVELOPMENT SUBMISSION	09/03/10
CONSTRUCTION DOCUMENT SUBMISSION	11/22/10
ISSUED FOR BIDS	12/19/11

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DO NOT SCALE THESE DRAWINGS. G.C. TO FIELD VERIFY DIMENSIONS

"ISSUED FOR BIDS"

FULLY SPRINKLERED

Drawing Title: GENERAL NOTES

Approved: Project Director

Project Title: BUILDING 11 ADDITION & INTERIOR RENOVATIONS

Location: WACO, TEXAS

Date: 19 DEC 2011

Checked

Drawn

Project Number: 674A4-CSI-516

Building Number: 11

Drawing Number: 11-SS-1.01

Dwg. 1 of 7

Office of Construction and Facilities Management

Department of Veterans Affairs

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