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PROJECT: **BURKER KING IMAGE UPGRADE**

LOCATION: **Patrick AFB, FL**

AAFES PN: 0927-07-000007
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SECTION 03100 - CONCRETE FORMWORK

PART 1 – 1. GENERAL

1.01 SECTION INCLUDES:

- A Formwork for cast-in-place concrete.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION:

- A Section 03300 – Cast-in-Place Concrete: Supply of concrete accessories for placement by this section.

1.03 RELATED SECTIONS:

- A Section 03200 – Concrete Reinforcement.
- B Section 03300 – Cast-in-Place Concrete.

1.04 REFERENCES:

- A ACI 301 – Structural Concrete for Buildings.
- B ACI 318 – Building Code Requirements for Reinforced Concrete.
- C ACI 347 – Recommended Practice For Concrete Formwork.
- D PS 1 – Construction and Industrial Plywood.

1.05 DESIGN REQUIREMENTS:

- A Design, engineer and construct formwork, shoring and bracing to conform to code requirements; resultant concrete to conform to required shape, line and dimension.

1.06 QUALITY ASSURANCE:

- A Perform Work in accordance with ACI 347, 301, and 318.

1.07 REGULATORY REQUIREMENTS:

- A Conform to applicable code for design, fabrication, erection and removal of formwork.

1.08 DELIVERY, STORAGE, AND HANDLING:

- A Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.09 COORDINATION:

- A Coordinate this Section with other Sections of work which require attachment of components to formwork.
- B If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, request instructions from Architect/Engineer before proceeding.

PART 2 –
2. PRODUCTS

2.01 WOOD FORM MATERIALS:

- A Plywood: Solid one side; sound undamaged sheets with clean, true edges.
- B Lumber: Stud grade; with grade stamp clearly visible.

PART 3 –
3. EXECUTION

3.01 EXAMINATION:

- A Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 ERECTION – FORMWORK:

- A Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to over stressing by construction loads.
- C Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D Align joints and make watertight. Keep form joints to a minimum.
- E Obtain approval before framing openings in structural members which are not indicated on Drawings.

3.03 APPLICATION – FORM RELEASE AGENT:

- A Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B Apply prior to placement of reinforcement steel, anchoring devices, and embedded items.

3.04 INSERTS, EMBEDDED PARTS, AND OPENINGS:

- A Provide formed openings where required for items to be embedded in passing through concrete work.
- B Locate and set in place items which will be cast directly into concrete.
- C Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

3.05 FORM CLEANING:

- A Clean forms as erection proceeds, to remove foreign matter within forms.
- B Clean formed cavities of debris prior to placing concrete.
- C Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.06 FORMWORK TOLERANCES:

- A Construct formwork to maintain tolerances required by ACI 301.

3.07 FIELD QUALITY CONTROL:

- A Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

3.08 FORM REMOVAL:

- A Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION 03100

SECTION 03200 - CONCRETE REINFORCEMENT

PART 1 – 1. GENERAL

1.01 SECTION INCLUDES:

- A Reinforcing steel bars and accessories for cast-in-place concrete.

1.02 RELATED SECTIONS:

- A Section 03100 – Concrete Formwork.
- B Section 03300 – Cast-in-Place Concrete.

1.3 REFERENCES:

- A ACI 301 – Structural Concrete for Buildings.
- B ACI 318 – Building Code Requirements For Reinforced Concrete.
- C ACI SP-66 – American Concrete Institute – Detailing Manual.
- D ANSI/AWS D1.4 – Structural Welding Code for Reinforcing Steel.
- E ASTM A615 – Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- F CRSI – Concrete Reinforcing Steel Institute – Manual of Practice.
- G CRSI – Placing Reinforcing Bars.

1.04 SUBMITTALS:

- A Submit under provisions of Section 01300.
- B Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel, bending and cutting schedules.

1.05 QUALITY ASSURANCE:

- A Perform Work in accordance with CRSI 63, 65 and Manual of Practice, ACI 301, and ACI 318.

1.06 COORDINATION:

- A Coordinate with placement of formwork, formed openings and other Work.

PART 2 – 2. PRODUCTS

2.01 REINFORCEMENT:

- A Reinforcing Steel: ASTM A615, 60 ksi yield grade; deformed billet steel bars, unfinished.

2.02 ACCESSORY MATERIALS:

- A Tie Wire: Minimum 16 gage annealed type.
- B Bolsters, Bar Supports, Horizontal Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.
- C Special Chairs, Bolsters, Bar Supports, Horizontal Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel type; size and shape as required.

2.03 FABRICATION:

- A Fabricate concrete reinforcing in accordance with CRSI Manual of Practice, ACI 318.

PART 3 –
3. EXECUTION

3.01 PLACEMENT:

- A Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B Do not displace or damage vapor barrier.
- C Accommodate placement of formed openings.
- D Conform to applicable code for concrete cover over reinforcement.

3.02 FIELD QUALITY CONTROL

- A Field inspection will be performed under provisions of Section 01400.

END OF SECTION 03200

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 – 1. GENERAL

1.01 SECTION INCLUDES:

- A Cast-in-place concrete foundation.

1.02 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION:

- A Section 03100 – Concrete Formwork: Placement of joint device anchors in formwork.

1.03 RELATED SECTIONS:

- A Section 03100 – Concrete Formwork: Formwork and accessories.

1.04 REFERENCES:

- A ACI 301 – Structural Concrete for Buildings.
- B ACI 302 – Guide for Concrete Floor and Slab Construction.
- C ACI 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- D ACI 305R – Hot Weather Concreting.
- E ACI 308 – Standard Practice for Curing Concrete.
- F ACI 318 – Building Code Requirements for Reinforced Concrete.
- G ASTM C33 – Concrete Aggregates.
- H ASTM C94 – Ready-Mixed Concrete.
- I ASTM C150 – Portland Cement.
- J ASTM C494 – Chemicals Admixtures for Concrete.
- K ASTM C618 – Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.

1.05 SUBMITTALS:

- A Product Data: Provide data on joint devices, attachment accessories and admixtures.

B Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent Work.

1.06 PROJECT RECORD DOCUMENTS:

A Accurately record actual locations of embedded utilities and components which are concealed from view.

1.07 QUALITY ASSURANCE:

A Perform Work in accordance with ACI 301.

B Acquire cement and aggregate from same source for all work.

C Conform to ACI 305R when concreting during hot weather.

1.08 COORDINATION:

A Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 –
2. PRODUCTS

2.01 CONCRETE MATERIALS:

A Cement: ASTM C150, Type I – Normal.

B Fine and Coarse Aggregates: ASTM C33.

C Water: Clean and not detrimental to concrete.

2.02 ADMIXTURES:

A Chemical: ASTM C494 Type A – Water Reducing, Type B – Retarding, Type C – Accelerating, Type D – Water Reducing and Retarding, Type E – Water Reducing and Accelerating, Type F – Water Reducing, High Range, Type G - Water Reducing, High Range and Retarding.

B Fly Ash Calcinated Pozzolan: ASTM C618 Class C or F.

2.03 CONCRETE MIX:

A Select proportions for normal weight concrete in accordance with ACI 301 Method 1.

B Use accelerating admixtures in cold weather only when approved by Engineer. Use of admixtures will not relax cold weather placement requirements.

- C Use set retarding admixtures during hot weather only when approved by Engineer.

PART 3 –
3. EXECUTION

3.01 EXAMINATION:

- A Verify requirements for concrete cover over reinforcement.
- B Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.02 PLACING CONCRETE:

- A Place concrete in accordance with ACI 304, ACI 301 and ACI 318.
- B Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
- C Install construction joint devices in coordination with plans. Set top to required elevations. Secure to resist movement by wet concrete.
- D Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E Place concrete continuously between predetermined expansion, control, and construction joints.
- F Do not interrupt successive placement; do not permit cold joints to occur, except as detailed.
- G Screed floors level, maintaining surface flatness of maximum ¼ inch in 10 ft.

3.03 CONCRETE FINISHING:

- A. Steel trowel surfaces.

3.06 CURING AND PROTECTION:

- A Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C Spraying: Spray water over floor slab areas and maintain wet for 3 days.

3.07 FIELD QUALITY CONTROL:

- A Provide free access to Work and cooperate with Testing Laboratory.
- B Submit proposed mix design to Engineer for review prior to commencement of Work.
- C Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
- D Four concrete test cylinders will be taken for every 50 cu yds of concrete placed.
- E One slump test will be taken for each set of test cylinders taken.

3.08 PATCHING:

- A Allow Architect/Engineer to inspect concrete surface immediately upon removal of forms.
- B Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/Engineer upon discovery.
- C Patch imperfections as directed.

3.09 DEFECTIVE CONCRETE:

- A Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B Repair or replacement of defective concrete will be determined by the Architect/Engineer.
- C Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

END OF SECTION 03300

SECTION 05120 - STRUCTURAL STEEL

PART 1 -

1. GENERAL

1.01 SECTION INCLUDES:

- A Structural steel framing members, and all accessory members associated with connections, bracing, etc.

1.02 REFERENCES:

- A ASTM A36 – Structural Steel.
- B AWS A2.0 – Standard Welding Symbols.
- C AWS D1.1 – Structural Welding Code.
- D AISC – “Code of Standard Practice for Steel Buildings and Bridges,” with Commentary, except: Paragraph 4.2.1 delete the following sentence: “This approval constitutes the Owner’s acceptance of all responsibility for his design adequacy of any connections designed by the fabricator as a part of his preparation of these shop drawings.”
- E AISC – Specification for the Design, Fabrication and Erection of Structural Steel for Buildings including Commentary and Supplements there to as issued.
- F SSPC – Steel Structures Painting Council.

1.03 SUBMITTALS:

A Shop Drawings:

- 1 Connections.
- 2 Field welder’s qualifications.

1.04 FIELD MEASUREMENTS:

- A Verify all field measurements.

PART 2 –

2. PRODUCTS

2.01 MATERIALS:

- A Structural Steel Members including rolled steel plates and bars: ASTM A36.
- B TS shapes – A500, Grade B (Fy = 46 ksi).

STRUCTURAL STEEL

- C Galvanized Bolts and Nuts: ASTM A307, Grade A.
- D Welding Materials: AWS D1.1; type required for materials being welded.
- E Shop and Touch-Up Primer: Zinc rich paint.
- 2.02 FABRICATION:
 - A Welded Construction: Comply with AWS Code for procedures, appearance, and quality of welds, and for methods used in correction welding work.
- 2.03 FINISH:
 - A Prepare structural component surfaces with shop primer.

PART 3 –
3. EXECUTION

- 3.01 EXAMINATION:
 - A Verify that field conditions are acceptable and are ready to receive work.
- 3.02 ERECTION:
 - A Comply with AISC Code and Specifications and code of Standard Practice and with specified requirements. Maintain work in safe and stable condition during erection.
 - B Set Structural members to the line and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly.
 - C Field weld components indicated on Drawing or shop drawings.
 - D Do not field cut or alter structural members without approval of Architect and Engineer.
 - E Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint and paint exposed areas with same material used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- 3.03 ERECTION TOLERANCES:
 - A Maximum Variation From Plumb: $\frac{1}{4}$ inch.
- 3.04 FIELD QUALITY CONTROL:

- A Field Welding: Inspect during erection of structural steel. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
- B Inspection by Independent Certified Inspector.

END OF SECTION 05120

SECTION 06112 - FRAMING AND SHEATHING

PART 1 – 1. GENERAL

1.01 SECTION INCLUDES:

A Floor, wall and roof sheathing and framing.

1.02 REFERENCES:

A APA: American Plywood Association.

B NFPA: National Forest Products Association.

1.03 DELIVERY, STORAGE, AND HANDLING:

A Deliver, store, protect, and handle products to site to prevent weather damage.

PART 2 – 2. PRODUCTS

2.01 LUMBER MATERIALS:

A Lumber Grading Rules: NFPA, SPIB, WWPA.

B Wall and Rafter Framing: #2 grade (DF), 19 percent maximum moisture content.

2.02 SHEATHING MATERIALS:

A Plywood Roof Sheathing: APA Rated Sheathing sanded.

B Plywood Wall Sheathing: APA Rated Sheathing sanded.

2.03 ACCESSORIES:

A Connections: Hot dipped galvanized steel (G90), sized to suit framing conditions, manufactured by Simpson or equal.

PART 3 – 3. EXECUTION

3.01 FRAMING:

A Set structural members level and plumb, in correct position.

B Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

- C Place horizontal members flat, crown side up.
- 3.02 SHEATHING:
 - A Secure wall sheathing with long dimension parallel to wall studs, with ends over firm bearing and staggered.
- 3.03 TOLERANCES:
 - A Framing Members: $\frac{1}{4}$ inch from true position, maximum.

END OF SECTION 06112