10/11/2022 1:57:17 PM

SECTION 03 47 13 - TILT-UP CONCRETE

PRODUCT REQUIREMENTS

A. Refer to Tilt-Up Concrete specifications on the structural drawings in addition to these specifications. Notify Architect of any discrepancies.
B. All admixtures are to be used in strict accordance with manufacturer's directions. The supplier will certify that all admixtures contain no chlorides or other corrosive materials. Calcium Chloride will NOT be permitted.
C. Curing Sealing Compound: Clear, Waterborne, Membrane-Forming Curing Compound:ASTM C 309, Type 1, Class B.
D. Bond Breaker:
1. Waterborne, Chemically Reactive Bond Breaker: Penetrating polymerized emulsion containing no oils, paraffins, or silicones, and compatible with casting-slab curing compound.
2. Waterborne, Membrane-Forming Bond Breaker: Dissipating polymerized emulsion containing no oils, waxes, paraffins, or silicones, and compatible with casting-slab curing compound.

TILT-UP CONCRETE

A. Comply with ACI 301 (ACI 301M), unless modified by requirements in the Contract Documents.

FORMS AND ACCESSORIES

A. Forms: Metal, dressed lumber, or other approved materials that are nonreactive with concrete and that will provide continuous, true, and smooth concrete surfaces.
B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch.
C. Form Liners: Units of face design, texture, arrangement, and configuration indicated. Furnish with manufacturer's recommended liquid-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent surface treatments of concrete.
D. Reveal Strips: Metal, PVC, rubber, straight dressed wood, or plywood; with sides kerfed.

ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Design Mixtures: For each concrete mixture.
C. Shop Drawings: Detail fabrication and installation of tilt-up concrete units. Indicate panel locations, plans, elevations, dimensions, shapes, cross sections, and details of steel embedments. Match panel identification designations on Shop Drawings with those on Contract Drawings.

1. Include steel reinforcement, detailing fabrication, bending, and placing.
2. Include additional steel reinforcement to resist hoisting and erection stresses.
3. Include locations and details of hoisting points and lifting devices for handling and erection.

INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.
B. Welding certificates.
C. Material certificates.
D. Material test reports.
E. Field quality-control reports.

SPECIAL INSPECTIONS

A. Engage a qualified independent testing agency, approved by the Authority Housing Jurisdiction, to perform tests and inspections and prepare test reports. Refer to Structural drawings for list of inspections.

CONCRETE FINISHING

FACE-UP FINISHES

A. Float Finish: Consolidate surface of plastic concrete with power-driven floats or by hand floating. Restraighten and cut down high spots and fill low spots. Repeat float passes and restraighten until surfaces is left with a uniform, smooth, granular texture.
B. Trowel Finish: After applying float finish, apply first trowel finish and consolidate plastic concrete by hand trowel or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and is uniform in texture and appearance.

FACE-DOWN FINISHES

A. Smooth, As-Cast Finish: Cast panel to produce a surface free of pockets, sand streaks, and honeycombs. Produce a surface appearance of uniform color and texture.
B. Form-Liner Finish: Cast panel over form liners placed, secured, and sealed over casting slab to produce a textured surface free of pockets, streaks, and honeycombs. Produce a surface appearance of uniform color and texture.

QUALITY ASSURANCE

A. Install all products according to manufacturers' written instructions.
B. Mockups: Cast and erect tilt-up concrete panel mockups to demonstrate typical reveals, surface finishes, texture, color, and standard of workmanship.

1. Build mockup panels in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Ensure sufficient curing/drying of concrete and remove residual curing and/or bond breaker material per manufacturer's instructions prior to installation of surface coatings, paints, etc.
D. Adhere to TCA's "Tilt-Up Concrete Associations's Guideline Specifications."

END OF SECTION 03 47 13

SECTION 31 31 16 - TERMITE CONTROL

PRODUCT REQUIREMENTS

SOIL TREATMENT

A. Termiticide: EPA-Registered termiticide acceptable to authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation.

1. Service Life of Treatment: Soil treatment termiticide that is effective for not less than five years against infestation of subterranean termites.

BAIT-STATION SYSTEM

A. EPA-Registered system acceptable to authorities having jurisdiction. Provide bait stations based on the dimensions of building perimeter indicated on Drawings, according to product's EPA-Registered Label and manufacturer's written instructions.

SUBMITTALS

A. Product Data: For each type of product. Include the EPA-Registered Label for termiticide products.
B. Product certificates.
C. Soil Treatment Application Report.

QUALITY ASSURANCE

A. Application: Mix soil treatment and apply prior to construction per EPA-Registered Label volume and rate for maximum specified concentration of termiticide to Slabs, Foundations, crawlspaces, so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. After construction treat masonry voids and penetrations.
B. Post warning signs in areas of application.
C. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

WARRANTY

A. Soil Treatment Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor, certifying that termite control work consisting of applied soil termiticide treatment will prevent infestation of subterranean termites including Formosan termites (Coptotermes formosanus). If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

END OF SECTION 31 31 16

SECTION 05 40 00 - COLD-FORMED METAL FRAMING

SUMMARY

A. Refer to structural drawings for additional specifications. Contact architect if any discrepancies are found.

PERFORMANCE REQUIREMENTS

A. AISI "Specifications": Calculate structural characteristics of cold-formed metal framing according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and the following:

1. Center for Cold-Formed Steel Structures (CCFSS) Technical Bulletin, Vol. 2, No. 1, February 1993 "AISI Specification Provisions for Screw Connections."

B. Structural Performance: Engineer, fabricate, and erect cold-formed metal framing to withstand design loads within limits and under conditions required.

1. Design Loads: As indicated.
2. Design framing systems to withstand design loads without deflections greater than the following unless noted otherwise on the Structural Drawings:

a. Exterior Walls: Lateral deflection of L/600 of the wall height backing brick veneer.
b. Interior Load-Bearing Walls: Lateral deflection of L/240 of the wall height.
c. Exterior Non load-Bearing Curtainwall: Lateral deflection of L/240 of the wall height.

3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature (range) of 120 deg F.
4. Design framing system to accommodate deflection of primary building structure and construction tolerances, and to maintain clearances at openings.

C. Design exterior non-load bearing curtainwall framing to accommodate lateral deflection without regard to contribution of sheathing materials.
D. Engineering Responsibility: Engage a fabricator who assumes undivided responsibility for engineering cold-formed metal framing by employing a qualified professional engineer registered in the state of the project to prepare design calculations, shop drawings, and other structural data.

PRODUCT REQUIREMENTS

MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:

1. Clark Western Building Systems
2. Dietrich Industries, Inc
3. MarinoWare; Div. of Ware Industries, Inc.

MATERIALS

A. Galvanized-Steel Sheet: ASTM A653/A653M.

1. Coating Designation: G 60 (Z 180).
2. Grade: As indicated on the Drawings.

WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs. Provide a minimum 16 gauge unless noted otherwise on the structural Drawings. 20 gauge may be allowed for non-structural interior framing.
B. Headers and Jambs: Manufacturer's proprietary shapes.
C. Deflection Track Slotted: Manufacturer's single, deep-leg, U-shaped steel track: punched with vertical slots in both legs.
D. Channel Bridging or Bracing: U-Channel Assembly; Base metal thickness of .0538 inch (1.37mm) and minimum ½ inch (12.7mm) wide flanges.

FRAMING ACCESSORIES

A. Fabricate steel-framing accessories of the same material and finish used for framing members, with minimum yield strength of 33,000 psi.

ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36, zinc coated by the hot-dip process according to ASTM A 123.
B. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times the design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
C. Powder-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times the design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
D. Mechanical Fasteners: Corrosion-resistant coated, self-drilling, self-threading steel drill screws.

1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

E. Welding Electrodes: Comply with AWS standards.

MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: Galvilite Cold Galvanizing Repair Compound, Esterified Epoxy Based Zinc Rich Metal Primer by ZRC Worldwide or a reviewed substitute by PPG or Tnemec. Use to repair all damaged galvanizing.
B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, Portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and a 30-minute working time.

FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, true to line, and with connections securely fastened, according to manufacturer's recommendations and the requirements of this Section. Perform fabrication in the shop.
B. Fabrication Tolerances: Fabricate assemblies to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet.
C. All members to be used in an exterior wall or partition or that will be exposed to weather shall be galvanized after fabrication.

EXECUTION

EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements, including installation tolerances and other conditions affecting performance of cold-formed metal framing. Do not proceed with installation until unsatisfactory conditions have been corrected.

PREPARATION

A. Grout bearing surfaces uniform and level to ensure full contact of bearing flanges or track webs on supporting concrete or masonry construction.

INSTALLATION, GENERAL

A. Install per manufacturer's instructions.

LOAD-BEARING WALL INSTALLATION

A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacing's recommended by the manufacturer, but not greater than the following:

1. Spacing: 24 inches for nail or power-driven anchors.
2. Spacing: 32 inches for cast-in-place or expansion anchors.

B. Squarely seat studs against webs of top and bottom tracks. Fasten both flanges of studs to top and bottom track. Space studs as follows:

1. Stud Spacing: 16 inches unless noted otherwise in the plans.

C. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.
D. Install horizontal bridging in stud system, spaced in rows not more than 60 inches apart. Fasten at each stud intersection.

1. Bridging: Cold-formed steel channel, clip angle fastened to webs of punched studs.

NONLOAD-BEARING CURTAINWALL INSTALLATION

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
B. Squarely seat studs against webs of top and bottom tracks. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:

1. Stud Spacing: 16 inches.

C. Isolate steel framing from building structure as indicated to prevent transfer of vertical loads while providing lateral support. If not indicated, coordinate with the Structural Engineer.
D. Install horizontal bridging in curtainwall studs, spaced in rows not more than 60 inches apart. Fasten at each stud intersection.

1. Bridging: Cold-formed steel channel, clip angle fastened to webs of punched studs.

REPAIRS AND PROTECTION

A. Immediately after erection, clean field welds made after erection, bolted connections, and abraded areas of shop paint, and primer damaged during handling and erection.
B. Galvanizing: For galvanized members, clean surfaces as required, and apply galvanizing repair touch-up.

SUBMITTALS

A. Provide shop drawings prepared by cold-formed metal framing manufacturer. Shop drawings, drawings, or documents showing location, layout, spacings, sizes, thicknesses, and types of cold-formed metal framing, fabrication, fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachments to other units of Work.

1. For cold-formed metal framing indicated to comply with design loadings, include structural calculations sealed and signed by the qualified professional engineer registered in the state of the project who was responsible for its preparation.

QUALITY ASSURANCE

A. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel" and AWS D1.3 "Structural Welding Code--Sheet Steel."

1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

B. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

END OF SECTION 05 40 00

SECTION 05 50 00 - METAL FABRICATIONS

PRODUCT REQUIREMENTS

FERROUS METALS

A. Refer to Steel/Metal specifications on the Structural Drawings in addition to these specifications. Notify Architect of any discrepancies.
B. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

PAINT

A. Shop Primer for Ferrous Metal: Compatible with finish paint systems indicated, and capability of providing a sound foundation for field-applied topcoats despite prolonged exposure. Compatible with finish paint specified in Division 09 Section - Painting. Capable of being applied to a minimum dry film thickness of 3 mils DFT and cover surface profile created by surface preparation. Shop primer to be by the same manufacturer as the finish coat. Cross coating is not permitted.

1. Interior Steel: Sherwin Williams Kem Kromick Universal Primer B50WZ1 White or a reviewed substitute.
2. Exterior: Hot dipped galvanized.
3. For Components Too Large to Galvanize, 1 Coat: Sherwin Williams Macropoxy High Solids B58W400 DFT white at 4 mils DFT or a reviewed substitute.

B. Galvanizing Repair Paint: High zinc dust content paint complying with SSPC Paint 20 and compatible with paints specified to be used over it.

FASTENERS

A. Provide plated fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating. Select fasteners for the type, grade, and class required. All fasteners in an exterior application or that are in contact with wood or cementitious materials shall be galvanized in accordance with ASTM A153.

FABRICATION, GENERAL

A. Galvanize all ferrous metal

1. In contact with concrete, masonry, earth.
2. Used for exterior applications.
3. Bearing plates for joists, beams, and lintels in masonry walls.

B. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
C. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of the required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

LOOSE STEEL LINTELS

A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
B. Weld adjoining members together to form a single unit where indicated.
C. All lintels exposed to exterior environment are to be hot dipped galvanized finish; no paint applied to this finish.

MISCELLANEOUS FRAMING AND SUPPORTS

A. Provide steel framing and supports for applications indicated that are not a part of structural steel framework as required to complete the Work.
B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed. Unless otherwise indicated, space anchors 24 inches o. c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide by 1/4 inch thick by 8 inches long.

MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and bars of profiles shown with continuously welded joints, and smooth exposed edges. Miter corners and use concealed field splices wherever possible.
B. Provide cutouts, fittings, and anchorages as required to coordinate assembly and installation with other work. Provide anchors, welded to trim, for embedding in concrete or masonry construction, spaced not more than 6 inches from each end, 6 inches from corners, and 24 inches o. c., unless otherwise indicated.

LADDERS

A. Aluminum Ladders

1. General: Fabricate ladders for the locations shown, with dimensions, spacings, details, and anchorages as indicated. Comply with requirements of ANSI A14.3.
2. Siderails: Continuous, aluminum 1/2-by-2-1/2-inch flat bars, with eased edges, spaced 20-1/4 inches apart.
3. Bar Rungs: 1-1/4 -inch- diameter steel bars, spaced 12 inches o. c.
4. Fit rungs in centerline of side rails, and secure with 4 aircraft rivets each having a shear strength of 900 pounds. Grind smooth on outer rail faces.
5. Mounting Brackets: 1/8-inch thick aluminum. Support each ladder at top and bottom and at intermediate points spaced as indicated. If not indicated, then space 60 inches o.c.

a. Size brackets to support design dead and live loads indicated and to hold centerline of ladder rungs clear of the wall surface by not less than 7".
b. Parapet Railings: 24 inches wide. Extend side rails 42 inches above top rung. If there is no platform, return rails to wall or structure unless other secure handholds are provided. If the adjacent structure does not extend above the top rung, goose-neck the extended rails back to the structure to provide secure ladder access.

6. Platform: When indicated on the Drawings:

a. Mill finish aluminum.
b. Floor: Grip strut floor.
c. Toe Boards: 0.063 thick x 4 inches wide.
d. Railings: 1-1/4 inch round aluminum with serrated surface and cast aluminum finish.

7. Cage: When required by code or indicated:

a. Mill finish aluminum.
b. Hoops: ¼ inch x 2 inches.
c. Vertical Bars: 3/16 inch x 1-1/2 inches.
d. Connect with solid rivets with rated shear strength of 900 pounds each.

8. Provide aluminum ship's ladders where indicated. Fabricate to open-type construction with brackets and fittings for installation. Aluminum shall be 6063-T6 alloy with mill finish. Provide manufacturer's 5-year materials and defects warranty.

a. Stringers: Aluminum channel with 1/8 inch wall thickness by 3 inches wide.
b. Rungs: Aluminum, 1-1/4 inches high by 4-1/8 inches deep. Width as indicated. If not indicated, then 24 inches wide. Space rungs 12 inches o. c. Form from extruded sections, squared and deeply serrated on all sides.
c. Hand Rails: Aluminum pipe, 1-1/2 inches diameter, schedule 40 with hemispherical aluminum end caps.
d. Landing Platform: Aluminum with serrated surface. Provide in thickness to meet expected loads and span supports with no deflection. Provide with guardrails to match rails on ladder.
e. Fittings, Brackets, Etc. All Aluminum as recommended by and provided by the ladder manufacture to match ladder.
f. Fasteners: Corrosion-resistant of suitable size and design for the components to be fastened.

PIPE BOLLARDS

A. Pipe: Schedule 40 steel pipe.
B. Base Plate: 3/8-inch- thick steel base plates for bolting to concrete slab. Drill base plates at all four corners for 3/4-inch anchor bolts. Where bollards are to be anchored to sloping concrete slabs, angle base plates for plumb alignment of bollards.

SHOP PRIMING

A. Shop prime steel surfaces not galvanized except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces to be high-strength bolted with slip-critical connections.
4. Surfaces to receive sprayed-on fireproofing.
5. Galvanized surfaces.
6. Faying surfaces.

B. Preparation for Shop Priming: Clean surfaces to be painted. Remove loose rust, loose mill scale, and spatter, slag, or flux deposits. Prepare uncoated ferrous metal surfaces to comply with requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:

1. Exteriors (SSPC Zone 1B): SSPC-SP 2 "Solvent Cleaning." followed by SSPC-SP 6 "Commercial Blast Cleaning" for metals to be galvanized, and metals scheduled for exterior use ."
2. Interiors (SSPC Zone 1A): SSPC-SP 2 "Solvent Cleaning." followed by SSPC-SP 3 "Power Tool Cleaning."

C. Shop Priming:1. Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
D. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

SUBMITTALS

A. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other Sections. Show method and details of bracing, including type and size of members and connections to be used, for all roof penetrations that are 12 inches or greater in diameter.
B. Samples representative of materials and finished products as requested by Architect.

QUALITY ASSURANCE

A. Check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.
C. Shelf Angles: Attach shelf angles to structural members. Do not attach shelf angles to steel studs. Break shelf angles at all corners where building expansion joints and masonry control joints will be installed. Do not extend shelf angle through expansion and control joints.
D. Roof Penetration Framing: Provide and install permanent bracing and supports around all roof penetrations that are 12 inches in diameter or greater.
E. Aluminum Ladders

1. Use aluminum vertical ladders in exterior installations and elsewhere as indicated.
2. General: Use heavy mastic or thin gasket material to separate aluminum mounting brackets from masonry. Apply mastic to aluminum surfaces in contact with the masonry, and allow mastic to dry prior to joining. Do not apply mastic to masonry.
3. Install ship's ladder where shown according to the manufacturer's instructions. Ensure that the ladder is anchored securely and to the recommended angle.

F. For all unprimed steel and steel with damaged primer or galvanizing, back prime, including all edges and concealed surfaces, of all ferrous and galvanized metal prior to installation. Apply primer to the same specifications as for the exposed surfaces. Treat all cut edges, end cuts, welds, and otherwise disturbed surfaces in the same way. Ferrous items shall be completely encapsulated with primer. Protect primed and finished steel that is in contact with masonry and cementitious surfaces from abrasion and corrosion caused by alkali action. Protection shall not interfere with rigidity of installation.
G. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and primer damaged during handling and erection. Apply paint to exposed areas using same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
H. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and apply galvanizing repair paint according to ASTM A 780.

END OF SECTION 05 50 00

SECTION 05 73 00 - DECORATIVE METAL RAILINGS

GENERAL

SUMMARY

A. Section Includes:
1. Aluminum decorative railings with stainless-steel wire-rope guard infill.

ACTION SUBMITTALS

A. Product Data: For the following:
1. Manufacturer's product lines of railings assembled from standard components.
2. Grout, anchoring cement, and paint products.
B. Shop Drawings: Include plans, elevations, section, and attachment details.
C. Samples: For each type of exposed finish required.
D. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer respondible for their preparation.

INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests perofrmed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.
B. Evaluation Reports: For post-installed anchors, from ICC-ES.

PRODUCTS

MANUFACTURERS

A. Greco Architectural Metal Products, A CSW Industrials Company
B. or equal
C. Model Number: G400A Horizontal Cable Railing

DECORATIVE METAL RAILINGS

A. Do not modify intended aesthetic effectsm as judge solely by Architect, except with Architect's approval.

PERFORMANCE REQUIREMENTS

A. Delegated design: Engage a qualified professional engineer to design railing, including attachment to building constuction.
B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Handrails and Top Rails of Guards:
a. Uniform load of 50 lb/ft. (0.73 kN/m) applied in any direction.
b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.
2. Infill of Guards:
a. Concentrated load of 50 lbf (0.22 kN) applied hoizontally on an area of 1 sq. ft. (0.093 sq. m).
b. Infill load and other loads need not be assumed to act concurrently.

METALS, GENERAL

A. Brakets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.

ALUMINUM

A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and iwth strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.
B. Extruded Bars and Sahpes, Including Extruded Tubing: ASTM B221 (ASTM B 221M), Alloy 6063-T5/T52.
C. Extruded Structural Pipe: ASTM B 429/B 429M, Alloy 6063-T6.
D. Drawn Seamless Tubing: ASTM B 210 (ASTM B 210M), Alloy 6063-T832.
E. Plate and Sheet: ASTM B 209 (ASTM 209M), Alloy 6061-T6.
F. Castings: ASTM B 26/B 26M, Alloy A356.0-T6.
G. Wire and Rope Fittings:
1. Wire Rope: 1-by-19 wire rope made from wire complying with ASTM A 492, Type 316.
2. Wire-Rope Fittings: Connectors of types indicated, fabricated from stainless steel, and with compatability to sustain, without failure, a load equal to minimum breaking strength of wire rope with which they are used.
3. Cable Diameter: 3/16 inch

FASTENERS

A. Fastener Materials: Unless otherwise indicated, provide the following:
1. Aluminum Components: Type 304 stainless-steel fasteners.
B. Post-Installed Anchors: Fastener systems with working apacity greater than or equal to the design load, acording to an evaluation report aceptable to authorities having jurisdiction, basedon ICC-ES AC193 [or ICC-ES AC308].
1. Material for Interior Locations: Cardon-steel components zinc plated to comply with ASTM B 633 or ASTM F1941 (ASTM F1941M), Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel Is Indicated,: Alloy [Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F836M).

MISCELLANEOUS MATERIALS

A. Bituminous Paint: Cold-applied asphalt emulsion complying with AST D 1187/D 1187M.
B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
B. Connections: Fabricate railings with welded connections unless otherwise indicated.
C. Welded Connections Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
1. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds; no evidence of a welded joint.
D. Mechanical Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
E. Form changes in direction by bending.
F. Bend members in jigs to produce uniform curvature for each configuration required: maintain cross section of member throughout entire bend without buckling, twisting , cracking, or otherwise deforming expose surfaces of componenets.
G. Close exposed ends of hollow railing members with prefabricated end fittings.
H. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.
I. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

ALUMINUM FINISHES

A. High-Performance Organic Finish: Three-coat flouropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color coat and topcoat.

EXECUTION

INSTALLATION

A. Install per manufacturer's written instructions

END OF SECTION 05 73 00

SECTION 05 51 13 - METAL PAN STAIRS

GENERAL

SUMMARY

A. Section Includes:
1. Preassembled steel stairs with concrete-filled or precast concrete treads.
2. Steel tube reailings attached to metal stairs.
3. Steel tube handrails attached to walls adjacent to metal stairs.

ACTION SUBMITTALS

A. Product Data: For metal pan stairs.
B. Shop Drawings: Include plans, elevations, sections, details and attachments to other work.
C. Delegated-Design Submittal: For stairs and railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

PRODUCTS

PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design stairs and railings.
B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
a. Uniform Load: 100lbf/sq.ft. (4.79kN/sq.m.)
b. Concentrated Load: 300lbf (1.33kN) applied on an area of 4 sq.in.
c. Uniform and concentrated loads need not be assumed to act concurrently.
d. Stair framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
C. Structural Performance of Railings: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
a. Handrails and Top Rails of Guards:
a. Uniform load of 50 lbf/ft. (0.73 kN/m) applied in any direction.
b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.
b. Infill of Guards:
a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
b. Infill load and other loads need not be assumed to act concurrently.
A. Seismic Performance of Stairzes: Metal stairs shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
1. Component Importance Factor: 1.5.

METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
C. Steel Tubing: ASTM A 500 (cold formed).
D. Uncoated, Cold-Rolled steel Sheet: ASTM A 1008/A 1008M, either commercial steel, Type B, or structural steel Grade 25 (Grade 170), unless another grade is required by design loads; exposed.
E. Woven-Wire Mech:Intermediate-crimp, square pattern, 2-inch (50-mm) woven-wire mesh, made from 0.135-inch (3.5-mm) nominal diameter wire complying with ASTM A 510 (ASTM A 510M).
F. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T6.

ABRASIVE NOSINGS

A. Cast-Metal Units: Cast iron, with an integral abrasive, as-cast finish.
B. Extruded Units: Aluminum units with abrasive filler in an epoxy-resin binder.
1. Provide ribbed units, with abrasive filler strips projects 1/16 inch (1.5 mm) above aluminum extrusion.
2. Provide solid-abrasive-type units without ribs.
C. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.
D. Apply bituminous paint to concealed surfaces of cast-metal units set into concrete.
E. Apply clear lacquer to concealed surfaces of extruded units set into concrete.

FASTENERS

A. Provide zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.

MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead-and chromatic-free, universal modified alkyd primer compying with MPI#79 and compatible with topcoat.
B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
C. Concrete Materials and Properties: Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minumum 280daycompressive strength of 3000 psi (20 MPa) unless otherwise indicated.
D. Welded Wire Reinforcement: ASTM A 185/A 185M, 6 by 6 inches (152 by 152 mm), W1.4 by W1.4, unless otherwise indicated.

PRECAST CONCRETE TREADS

A. Concrete Materials and Properties: Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete" for normal-weight, ready-mixed concrete with a minimum 28-day compressive strength of 5000 psi (35 MPa) and a total air content of not less than 4 percent or more than 6 percent.
B. Reinforcement: Galvanized, welded wire reinforcement, 2 by 2 inches (50 by 50 mm) by 0.062-inch- (1.6-mm-) diameter wire; comply with ASTM 185/A 185M and ASTM A 82/A 82M, except for minimum wire size.

FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
1. Join components by welding unless otherwise indicated.
2. Use connections that maintain structural value of joined pieces.
B. At exposed connections, finish exposed wels to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 3 welds: partially dressed weld with spatter removed.

STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum standards for Fixed Metal Stair" in NAAMM AMP 510, "Metal Stairs Manual," [Commercial] [Service] Class, unless more stringent requirements are indicated.
B. Stair Framing:
1. Fabricate stringers of steel channels.
a. Provide closures for exposed ends of channel stringers.
2. Construct platforms of steel channel headers and miscellaneous framing members as needed to comply with performance requirements indicated.
3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.
4. Where stairs are enclosed by gypsum board shaft-wall assemblies, provide hanger rods or struts to support landings from floor construction above or below. Locate hanger rods and struts where they do not encrouch on required stair width and are within the fire-resistance-rated stair enclosure.
5. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.
C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch (1.7 mm).

STAIR RAILINGS

A. Steel Tube Railings: Fabricate reailings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.
1. Rails and Posts: 1-5/8-inch- (42-mm-) diameter or when shown on drawings, 1-1/2-inch- (38-mm-) square top and bottom rails and 1-1/2-inch- (38-mm-) square posts.
2. Picket Infill 1/2-inch- (13-mm- [round] [square] pickets spaced less than 4 inches (100 mm) clear.
3. Mesh Infill: Woven wire mesh crimped into 1-by-1/2-by-1/8-inch (25-by-13-by-3-mm) steel channel frames. Orient wire mesh with [diamonds vertical] [wire perpendicular and parallel to top rail] [wires horizontal and vertical].
B. Welded Connections: Fabricate railings with welded connections. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
1. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 3 Welds: partially dressed weld with spatter removed as shown in NAAMM AMP 521.
C. Close exposed ends of rialing members with prefabricated end fittings.
D. Provide wall returns at ends of wall-mounted handrails.
E. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work.
F. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses.

FINISHES

A. Finish metal stairs after assembly.
B. Preparation for Shop Priming: Prepare uncoated ferrou-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning".
C. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

END OF SECTION 05 51 13

MUSSMAN ARCHITECTS
610 N. Main Street Greenville, SC 29601
ph: 864-626-6330 email: paulm@mussmanarchitects.com

CONSULTANT LOGO

SEALS
STATE OF FLORIDA · PAUL GREGORY MUSSMAN · AR98980 · REGISTERED ARCHITECT
SEAL DATE: 10.07.2022

TREASURE COAST CLASSICAL ACADEMY

TCCA HIGH SCHOOL BUILDING
1400 SE COVE RD
STUART FLORIDA 34997

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
0	10.07.22	Permit Submittal	MG

PRINCIPAL IN CHARGE: PM
PROJECT ARCHITECT: MG
DRAWN BY: MG

SHEET TITLE:
SPECIFICATIONS

SHEET NO. A100.1
PROJ. NO. 022004

C:\Users\mollieg\Documents\022004 Summit_Treasure Coast HS_Stuart, FL_R22_mollieg86CW.rvt