

H. Grout: Non-shrink meeting ASTM C1107, non-metallic, pre-mixed, factory-packaged, non-staining, non-corrosive, type specifically recommended by manufacturer as applicable to job condition; Sonneborn "SonogROUT 10K" by BASF Construction Materials, or equal.

I. Fasteners and Rough Hardware: Type required for specific usage; provide zinc-coated fasteners for exterior use or where built into exterior walls. Fasteners exposed to public access to be designed to prevent vandalism and theft.

J. Welding Materials: AWS D1.1, type required for materials being welded.

K. Paint: Provide primers recommended by paint manufacturers specified in Section 09 90 00 - Painting and Coating.

1. Galvanizing Repair Paint: High zinc-dust content paint for regalanizing welds in galvanized steel.

2.2 FABRICATION

- A. Fabricate items with joints neatly fitted and properly secured.
- B. Grind exposed welds continuous, smooth and flush with adjacent finished surfaces, and ease exposed edges to approximate 1/32" uniform radius.
- C. Exposed Mechanical Fastenings: Flush countersunk fasteners unobtrusively located, consistent with design of structure.
- D. Fit and shop assemble in largest practical sections for delivery.
- E. Make exposed joints flush butt type, hairline joints where mechanically fastened. Fabricate joints exposed to weather in manner to exclude water or provide weep holes where water could accumulate.
- F. Supply components required for proper anchorage of metal fabrications; fabricate anchorage and related components of same material and finish as metal fabrication.
- G. Pre-Engineered Support Systems: Provide manufactured pre-engineered support system consisting of minimum 12 gage "C" channel supports with anchors, attachments, and accessories as required for complete installation.
 - 1. Manufacturers: Unistrut Inc./Unistrut; Grinnell Corp./PowerStrut; Thomas & Betts, Inc./Superstrut.
- H. Finishes: Galvanize and prime paint exterior work and prime paint interior work unless otherwise noted in Schedule, comply with requirements of Section 09 90 00 - Painting and Coating for preparation and priming.
 - 1. Thoroughly clean surfaces of rust, scale, grease and foreign matter prior to applying finish.
 - 2. Do not shop prime surfaces in contact with concrete or requiring field welding; shop prime in one coat.
 - 3. Galvanized Coating: Provide coating comparable to ASTM A924 and A653, minimum G90 hot dip galvanizing coating.
 - 4. Non-Galvanized Exterior Steel: Provide zinc-rich primer such as Tnemec/Tnemec-Zinc 90-97.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field Measurements. Take field measurements prior to preparation of shop drawings and fabrication, where possible, do not delay job progress, allow for trimming and fitting where necessary.

3.2 ERECTION

- A. Obtain Architect's review prior to site cutting or making adjustments which are not part of scheduled work.
 - 1. Perform necessary cutting and altering for installation and coordination with other work.
- B. Install items square and level, accurately fitted and free from distortion or defects detrimental to appearance or performance.
 - 1. Supply items required to be cast into or embedded in other materials to appropriate trades.
 - 2. Ensure alignment with adjacent construction; coordinate with related work to ensure no interruption in installation.
- C. Make provision for erection stresses by temporary bracing, keep work in alignment.
- D. Field bolt and weld to match standard of shop bolting and welding; hide bolts and screws whenever possible, where not hidden, use flush countersunk fastenings.
 - 1. Perform field welding in accordance with AWS D1.1.
- E. Holes that require enlarging to admit bolts shall be reamed. Holes shall not be enlarged by flame cutting.
- F. After installation, touch-up field welds and scratched and damaged surfaces; use primer consistent with shop coat or recommended for galvanized surfaces, as applicable.
- G. Wet storage stains on galvanized steel shall be removed after installation.
- H. Replace items damaged in course of installation and construction.

END OF SECTION

SECTION 08 54 00 - METAL STAIRS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide steel stairs and landings, handrails, and including plates, angles, hangers and struts for securing to building structure.

1. Provide additional steel as required for setting of stairs and concrete as indicated on Architectural and Structural Drawings.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Designated Design Services: Provide special engineering and related services to ensure compliance with applicable codes and Contract Documents.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's literature including recommendations for cleaning.
- B. Shop Drawings: Show detailing including anchorage, accessories, and supporting members.
- C. Samples: Furnish samples of each exposed metal finish and corner section of wainscot.
- D. Designated Design Certificates: Submit engineer certification by licensed structural engineer at Project location indicating compliance with Contract Documents and code requirements.
- E. Submit load tables and calculations verifying structural requirements.

D. Certifications: Certification for each welder.

QUALITY ASSURANCE

A. Fabricator Qualifications: Firm with not less than five years successful experience fabricating custom stairs for projects of similar size and scope.

PART 2 - PRODUCTS

2.1 MATERIALS

A. System Requirements: Provide steel stairs and landings, with stair handrails, and including plates, angles, hangers and struts for securing to building structure.

B. Design Requirements: Design stairs and landings to support following minimum loads.

- 1. Stairs: 100 lbs./sq. ft. loads, with individual stair treads designed to support a 300 pound concentrated load placed in a position which would cause maximum stress.
- 2. Landings: Support a lateral force of 50 lbs./sq. ft. uniform load and 200 lbs. at any single point without permanent set or damage, ASTM B235.
- 3. Top Rails: Design to support minimum 300 lb. concentrated single point load applied at any point vertically or horizontally.

C. Regulatory Requirements: Comply with applicable codes and regulations relating to stair and railing design and for ensuring access for persons with disabilities.

D. Steel Sections, Plates, Shapes and Bars: ASTM A36.

E. Structural Steel Sheet: Hot rolled, ASTM A1011; or cold rolled, ASTM A1008, Class 1, and as required for bolting.

F. Steel Tubing: Cold formed ASTM A500, or hot rolled, ASTM A501, minimum Grade B, seamless where exposed.

G. Castings: Gray iron, ASTM A48, Class 30, malleable iron, ASTM A47.

H. Concrete Inserts: Threaded or wedge type, galvanized ferrous castings, either malleable iron ASTM A47, or cast steel ASTM A27. Provide bolts, washers and nuts as required, including galvanized. ASTM A153.

I. Grout: Non-shrink meeting ASTM C1107, non-metallic, pre-mixed, factory-packaged, non-staining, non-corrosive, type specifically recommended by manufacturer as applicable to job condition.

J. Fasteners and Rough Hardware: Type required for specific usage; provide zinc-coated fasteners for exterior use or where built into exterior walls.

K. Welding Materials: AWS D1.1, type required for materials being welded.

L. Paint: Provide primers as recommended by paint manufacturers for substrates and paints specified in Section 09 90 00 - Painting and Coating.

1. Exterior Exposed Stair Galvanizing Repair Paint: High zinc-dust content paint for regalanizing welds in galvanized steel.

2.2 FABRICATION

- A. Stairs: Comply with requirements of NAAMM "Metal Stair Manual", including components required for proper anchorage of metal stairs. Design stairs with stringers attached to landings only, allow 1/2" space between stringers and walls.
- 1. Stairs: Refer to Drawings.
- 2. Stair Class: NAAMM Architectural Class.
- 3. Part Stairs and Landings: Fabricate stairs with landings and treads of span construction with treads, landings and stairs from chest stock. Stairs inset pans to stringer with clip angles welded in place.
 - a. Treads and landings: minimum 3/16" thick formed steel floor plate.
 - b. Risers: Minimum 1/4 gage sheet to profiles shown.
- 4. Provide minimum 3/80 gal concrete fill for treads and landings, with non-slip fused aluminum oxide or crushed emery finish.
- 5. Hosing: Provide with extrusive nosing, 2" wide, contrasting color to tread.

B. Railings: As indicated and as required by applicable codes and standards; comply with NAAMM "Post Railing Manual", welded construction; cap exposed ends.

1. Handrail: Seamless steel tube, 1-1/2" outside diameter, continuous railings conforming to applicable code and design requirements.

2. Wall Rail Brackets: Castings as approved by Architect.

3. Wall Returns: 90° elbow return with 1/4" maximum radius, unless otherwise indicated. Provide wall plates only where indicated and where required by applicable codes.

C. Fabricate stairs, landings and component connections to support loads specified.

1. Provide closed riser with nosing joints to be welded and not less than 1/4 gage.

2. Maximum Rise: See Section 05 30 00 - Concrete.

3. Stringer: Plate or tube type with closed ends unless otherwise indicated on drawings.

4. Provide edge forming curbing at open edges of landings and treads. Remove undersides of landings.

a. Concrete Castings: Provide smooth soff surfaces unless suspended ceiling finish is indicated.

D. Fabricate items with joints neatly fitted and properly secured.

E. Grind exposed welds continuous, smooth and flush with adjacent finished surfaces, and ease exposed edges to approximate 1/32" uniform radius.

F. Exposed Mechanical Fastenings: Flush countersunk fasteners unobtrusively located.

G. Fit and shop assemble in largest practical sections for site delivery.

H. Make exposed joints flush butt type, hairline joints where mechanically fastened.

I. Exterior Exposed Items: Fabricate joints exposed to weather in manner to exclude water or provide weep holes where water could accumulate.

J. Supply components required for proper anchorage of metal stairs.

K. Fabricate anchorage and related components of same material and finish as metal stairs and rails.

L. Thoroughly clean surfaces of rust, scale, grease and foreign matter prior to applying finish.

L. Supply components required for proper anchorage of metal fabrications; fabricate anchorage and related components of same material and finish as metal fabrication.

M. Finishes: Thoroughly clean surfaces of rust, scale, grease and foreign matter prior to applying finish. Do not shop prime surfaces in contact with concrete or requiring field welding; shop prime in one coat.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, do not delay job progress, allow for trimming and fitting where necessary.

1. Verify clearances are sufficient, including code required head height clearances.

3.2 INSTALLATION

A. Obtain Architect's review prior to site cutting or making adjustments which are not part of scheduled work.

1. Perform necessary cutting and altering for installation and coordination with other work.

2. Install steel stairs and railings square and level, plumb and free from distortion or defects detrimental to appearance and performance.

C. Make provision for erection stresses by temporary bracing, keep work in alignment.

D. Ensure alignment with adjacent construction; coordinate with related work to ensure no interruption in installation.

E. Field bolt and weld to match standard of shop bolting and welding; hide bolts and screws whenever possible, where not hidden, use flush countersunk fastenings.

1. Perform field welding in accordance with AWS D1.1.

2. Provide holes and connections for work of other trades.

3. Draw nuts tight. Nuts, treads of permanent connections.

4. Use beveled washer where bearing is on sloped surface.

F. Where screws must be used for permanent connections, use countersunk finished type. Space exposed screws evenly and symmetrically.

G. Attach stringers to structure at landings only. Allow a minimum 1/2" gap between stringers and walls.

H. Railing installation.

1. Ceap neatly to fit.

2. Secure wall railing brackets to stud wall construction with bolts into steel backing plates welded to studs.

3. Space brackets minimum 60 inches on center and 3 inches from edge of rails.

4. Return rails to walls at ends.

5. Adjust railings prior to securing in place to ensure no rubbing at building joints and correct alignment throughout. At their termination, remove any burrs or protrusions that might snag a person or disturb a smooth surface.

1. After installation, touch-up field welds and scratched and damaged surfaces; use primer consistent with shop coat or recommended for galvanized surfaces, as applicable.

J. Replace items damaged in course of installation and construction.

END OF SECTION

SECTION 06 10 00 - DECORATIVE METAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide decorative (ornamental) metal items including attachment devices and accessories, as required for complete, finished installation.

- 1. Provide custom powder coat finished aluminum awnings.
- 2. Provide custom powder coat finished aluminum column covers.

- 3. Install Owner furnished decorative painted metal wainscot and wall mounted merchandising systems.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Designated Design Services: Provide special engineering to ensure compliance with applicable codes and Contract Documents.

B. Pre-Installation Meeting: Convene not less than one week prior to commencing work of this Section. Require attendance of those directly affecting work of this Section.

1. Review installation procedures and coordination required with related work.

1.3 SUBMITTALS

A. Product Data: Furnish manufacturer's literature including recommendations for cleaning.

B. Shop Drawings: Show detailing including anchorage, accessories, and supporting members.

C. Samples: Furnish samples of each exposed metal finish and corner section of wainscot.

D. Designated Design Certificates: Submit engineer certification by licensed structural engineer at Project location indicating decorative metal complies with Contract Documents and applicable code requirements.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Firm with minimum five years successful experience fabricating ornamental metal items similar to those required for Project.

PART 2 - PRODUCTS

2.1 MATERIALS

A. System Description: Provide decorative (ornamental) metal items specified including attachment devices and accessories.

B. Design Requirements: Drawings indicate ornamental metal sizes and shapes; unless otherwise specifically indicated, design components and fabrications of gages and thicknesses to withstand anticipated loads.

C. Design Requirements: Design to support loads as required by applicable codes and regulations.

D. Aluminum: Provide alloy and temper recommended by aluminum producer or finisher for type and use and finish indicated; sized for strength and durability consistent with application involved.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, do not delay job progress, allow for trimming and fitting where necessary.

1. Verify clearances are sufficient, including code required head height clearances.

3.2 INSTALLATION

A. Obtain Architect's review prior to site cutting or making adjustments which are not part of scheduled work.

1. Perform necessary cutting and altering for installation and coordination with other work.

2. Install steel stairs and railings square and level, plumb and free from distortion or defects detrimental to appearance and performance.

C. Make provision for erection stresses by temporary bracing, keep work in alignment.

D. Ensure alignment with adjacent construction; coordinate with related work to ensure no interruption in installation.

E. Field bolt and weld to match standard of shop bolting and welding; hide bolts and screws whenever possible, where not hidden, use flush countersunk fastenings.

1. Perform field welding in accordance with AWS D1.1.

2. Provide holes and connections for work of other trades.

3. Draw nuts tight. Nuts, treads of permanent connections.

4. Use beveled washer where bearing is on sloped surface.

F. Where screws must be used for permanent connections, use countersunk finished type. Space exposed screws evenly and symmetrically.

G. Attach stringers to structure at landings only. Allow a minimum 1/2" gap between stringers and walls.

H. Railing installation.

1. Ceap neatly to fit.

2. Secure wall railing brackets to stud wall construction with bolts into steel backing plates welded to studs.

3. Space brackets minimum 60 inches on center and 3 inches from edge of rails.

4. Return rails to walls at ends.

5. Adjust railings prior to securing in place to ensure no rubbing at building joints and correct alignment throughout. At their termination, remove any burrs or protrusions that might snag a person or disturb a smooth surface.

1. After installation, touch-up field welds and scratched and damaged surfaces; use primer consistent with shop coat or recommended for galvanized surfaces, as applicable.

J. Replace items damaged in course of installation and construction.

END OF SECTION

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide rough carpentry including lumber and plywood, nails, bolts, washers, fasteners, anchors and connectors for carpentry, miscellaneous blocking, and accessories, including blocking for roofing system and related flashing, as required for complete installation.

1.2 REFERENCES

A. Forest Products Society (FPS): National Design Specification for Stress Grade Lumber and Its Fastening.

1.3 SUBMITTALS

A. Product Data: Submit wood treatment certifications and instructions for proper use of each type of treated material.

1.4 QUALITY ASSURANCE

A. Lumber Grades: Provide visible grade stamp of an agency approved by FPS; do not place grade marking on exposed face or surface which will remain exposed in finished work.

B. Lumber Standard: Comply with US Product Standard PS20 for use indicated use, including moisture content and actual sizes related to nominal sizes indicated.

C. Plywood Standard: Comply with PS1 (ANSI) PS1-1.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Keep materials dry, protect against exposure to weather and contact with damp ground. Immediately remove moisture from materials with vapor mold and mildew inhibitors.

B. Store materials to provide clear circulation within and around stacks, providing clear circulation at each course for water-borne chemical treated materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. System Description: Provide rough carpentry including lumber and plywood, nails, bolts, washers, fasteners, anchors and connectors for carpentry, miscellaneous blocking, and accessories.

Regulatory Requirements: Comply with applicable code requirements for rough carpentry.

C. Lumber: Graded in accordance with FPS Grading Rules, Construction Grade, Stud or Standard Grade for stud framing, and Standard or Better Grade for other light framing.

1. Actual Size: Industry standards, S4S.

2. Moisture Content of Framing: Minimum S-Dry, as appropriate for region but not greater than 19%.

3. Sills on Concrete: Pressure treated.

4. Structural Framing: Comply with WUPA "Product Use Manual" for selection and use of products included in Manual, minimum No. 1 Grade.

- a. Provide Construction Grade unless otherwise indicated on Drawings or required by applicable codes.

D. Plywood: Provide plywood graded as indicated on Drawings and required by applicable codes, where not otherwise graded, comply with following APA minimum standards.

1. Moisture Content: As appropriate to region but not greater than 12% or less than 8%.

2. Exterior Plywood: Structural I, Exterior type, C-D grade, for stud walls; five plies for 1/2" or thicker.

3. Interior Plywood: Interior type, C-D grade unless otherwise indicated, five plies for 1/2" or thicker.

4. Panel Boards: For electrical and communication panel boards, C-D plugged, interior type plywood with exterior glue, fire retardant treated, minimum 1/2" thick.

E. Engineered Wood Products

1. Laminated Veneer Lumber: Composite of wood veneers with grain primarily parallel to member lengths, manufactured with exterior-type adhesive complying with ASTM D2559 with allowable design values determined according to ASTM D5456.

2. Parallel-Strand Lumber: Structural composite lumber made from wood strand elements with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559.

F. Rough Hardware: Furnish rough hardware, bolts, nails, fasteners, anchors, and connectors as required to complete the work.

1. Screws for attaching wood members and plywood to metal stud walls, partitions and furring shall be Type S self-drilling, self-tapping, steel drywall screws of required length.

2. Nails, Spikes and Staples: Size and type to suit application.

3. Bolts, Nuts, Washers, Lags, Pins and Screws: Medium carbon steel, size and type to suit application.

4. Fasteners: Provide fasteners as required for complete, secure installation of miscellaneous rough carpentry.

5. Hot-dip-galvanize items exposed to moisture or weather.

2.2 FABRICATION

A. Wood Preservation: Treat lumber and plywood to comply with applicable requirements of American Wood Preservers Association and applicable codes.

B. Decay Resistance Treatment: Pressure treat wood in accordance with AWPA U1 using preservative chemicals acceptable to authorities having jurisdiction and containing no arsenic or chromium.

1. Treat wood members based on AWPA U1 Use Categories as appropriate to Project location and exposure.

2. Kin-dry wood to a maximum moisture content appropriate to region but not greater than 19% after treatment with water-borne preservative.

C. Fire Retardant Treatment: Comply with AWPA standards for pressure impregnation with fire-retardant chemicals to achieve flame-spread rating of not more than 25 in accordance with ASTM E84 or UL Test 723. Provide fire retardant treatment where indicated and where required by applicable codes.

1. Interior Type: Treat interior wood and plywood complying with applicable code requirements for Interior FRTW.

2. Exterior Type: Where indicated for exterior applications, provide fire treated wood passing ASTM D2698 rain test.

3. Provide UL label on each piece of fire-retardant wood and plywood.

4. Kin-dry treated items to maximum moisture content appropriate to region but not greater than 19%.

5. Inspect each piece after drying and discard damaged and defective pieces.

D. Complete fabrication of treated items prior to treatment, wherever possible; if cut after treatment, coat cut surfaces with heavy brush of same chemical used for treatment. Inspect each piece after drying and discard damaged and defective pieces.

PART 3 - EXECUTION

3.1 PLACEMENT

A. Place rough carpentry true to lines and levels, assemble members to minimize effects of shrinkage.

B. Correlate location of attached work with design requirements and properly located.

C. Construct members of continuous pieces of longest possible lengths; discard members with defects which might impair quality of work, and which are too small to allow minimal joints.

D. Fit carpentry with other work, scribe and cope as required for accurate fit.

Shim with metal or slate for bearing on concrete.

Securely attach carpentry work to substrates by anchoring and fastening as required by recognized standards. Provide washers under both heads and nuts in contact with wood.

G. Stud Wall Framing: Comply with applicable codes.

1. Anchor sill plates full bearing on concrete with powder-driven nails.

2. Cut studs and posts with square edges, unless otherwise indicated.

3. Place studs with shortest dimension parallel to run of wall.

4. Frame openings with headers across top, as shown, with minimum size (6" deep by stud width) resting on short cripple studs.

5. Double top plates, set single with staggered splices, lap double top plate at corners, and frame corners solid.

6. Stud Partitions and Walls: Provide horizontal blocking not less than 2x and of same width as stud, fitted and nailed into studs mid-height where over 8 feet in height, unless otherwise indicated.

- a. Space blocking with no concealed air spaces greater than 8 feet in any dimension.

7. Frame partitions to provide clearance for piping.

- a. Pipes exceeding 1-1/2" inside diameter shall not be placed in partitions used as bearing or shear walls, unless furred clear of wall.

b. Do not notch plates, place pipes in center of plate using neat, bored hole, strap plates on each side with 3" by 36" by 14 gage steel punched for 10d nails, 3" on center, staggered.

H. Wood Grounds, Nailers, Blocking, and Furring

1. Provide for attachment of other work; form to shapes indicated on Drawings.

2. Countersink bolts and nuts flush with surfaces.

- a. Anchor to formwork before concrete placement.
- b. Build into masonry as work progresses, cutting to fit masonry unit size involved.

3. Provide grounds of dressed, key-beveled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved.

- a. Remove temporary grounds when no longer needed.
- b. Where indicated as permanent grounds, provide treated lumber.

I. Framing: Comply with applicable recommendations of National Forest Products Association referenced standard, for fabrication and installation.