DIVISION 5

SECTION 5B METAL STAIRS

5B.01 GENERAL: Comply with all of the Contract Documents.

5B.02 SCOPE OF WORK: Refer to "Division Scope of Work"

5B.03 METAL STAIR MATERIALS

A. GENERAL

1. Steel Plates, Shapes and Bars: ASTM A 36.

2. Steel Plates to be Bent or Cold-Formed: ASTM A 283, Grade C.

3. Steel Tubing: (Hot-formed, welded or seamless), ASTM A 501.

4. Cold-Finished Steel Bars: ASTM A 108, grade as selected by fabricator.

5. Hot-Rolled Carbon Steel Sheets and Strips: ASTM A 570.

6. Cold-Rolled Carbon Steel Sheets: ASTM A 366.

7. Ferritic Malleable Iron Castings: ASTM A 47, grade as selected.

8. Pipe: ASTM A 53; welded and seamless steel pipe Grade B; black finish; standard weight (Schedule 40).

9. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails.

10. Welding Electrodes: shall conform to requirements of AWS A 5.1-69, "Specifications for Mild steel Covered Arc-Welding Electrodes," E700XX.

11. Bolts and Nuts: ASTM A307-76A.

12. Shop Paint: shall conform to Federal Specifications TT-P-86, Type I, or Red Metal Primer.

13. Nonshrink Grout: CE CRD C 588.

14. Wire Fabric:

    a. Comply with ASTM A185, welded mesh size 2" x 2", using 12 gauge wire

in both directions.

b. Tack weld to inside of steel pan treads.

15. All other materials, not specifically described but required for a complete and proper installation of Steel Stairs be new, best quality of their respective kinds, and subject to approval of Architect/Engineer.

B. SPECIFIC

1. Public Hall Stairs

a. STRINGERS: Existing stringers shall remain. If damaged, missing or defective, new stringers shall be MC10 x 8.4. Carrier angles shall be 1 1/4" x 1 1/4" x 3/16" minimum.

b. RISERS AND PAN TREADS: shall be 12 gauge hot rolled steel sheets with adjoining risers and pan treads integrally formed. ASTM A245.

c. PLATFORMS: shall be 10 gauge hot rolled steel sheets integrally formed reinforcing angle ribs. ASTM A245.

d. NEWELS: Starting newels 4" square steel tubing. Intermediate newels at floors and platform 4" square steel tubing.

e. BALUSTRADE: shall have balusters 1/2" solid steel square bars, spaced 5" on center, welded to bottom rail and top rail, 1" x 1/2" steel channels.

f. HANDRAILS (WALL AND BALUSTRADE): All wooden natural finish. Profile shall be approved by Architect/Engineer. Grade shall be AWI premium grade. Species of solid wood, oak or natural birch.

g. QUARRY TILE TREADS: As per scope of work, quarry tiles shall be supplied and installed under Section 9C ceramic tile and quarry tile.

2. Cellar, Basement and Exterior Stairs

a. STRINGERS: Existing stringers shall remain. If damaged, missing or defective, new stringers shall be MC10 x 8.4. Carrier angles shall be 1 1/4" x 1 1/4" x 3/16" minimum.

b. RISERS: shall be 12 gauge hot rolled steel sheets (for basement and cellar stairs). Exterior stairs shall have open risers.

c. TREADS: shall be 1/8" thick diamond steel floor plate.

d. PLATFORMS: shall be 1/8" thick diamond steel floor plate.

e. RAILINGS: shall be 1 1/4" steel pipe with intermediate posts welded to railings.

f. HANDRAILS: shall be 1 1/4" steel pipe, malleable iron brackets.

5B.04 WORKMANSHIP

A. GENERAL

1. All work included herein shall be of the highest standard of material and workmanship. Defective work of any character, whether in materials or workmanship may be rejected and all rejected work shall be repaired or replaced to the satisfaction of Architect/Engineer and without additional cost.

2. Assemble the work carefully and accurately and finish it straight, smooth, and even, free from defects. Joints shall be practically invisible. Securely fasten all work together and anchor, brace, support and attach to supporting materials of construction in rigid manner throughout.

3. Welds should be tight and free from defects, shall be finished to blend into the adjoining finish.

4. All drilling, tapping, cutting, fitting of work included herein shall be done as required to accommodate other work in conjunction with it.

5. All parts, accessories and connections shall be adequate to safely sustain and withstand stresses and strains to which they will be normally subjected. Where exposed fastenings are shown or approved, they shall be of types and spacing approved by Architect/Engineer.

B. QUALITY ASSURANCE

1. Qualifications of Welders: Use only certified welders and the shielded arc process for all welding perform in connection with the work of this section.
The contractor shall be required to provide the welder's license and certification prior to beginning work. For field welding the Buildings Department will require an engineer to file Controlled Inspections certifying strength of welding.

2. Code and Standards: In addition to complying with the N.Y.C. Building Code and regulations, comply with:

   a. "Specification for Design, Fabrication, and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction.

b. "Code for Welding in Building Construction," AWS D1.0 latest edition of the American Welding Society.

c. "Metal Stairs Manual Revised Edition (1982)" of the National Association of Architectural Metal Manufacturers, latest edition.

3. Conflicting Requirements: In the event of conflict between pertinent codes and regulations and the requirements of the referenced standards of these specifications, the provisions of the more stringent shall govern.

C. COORDINATION AND MEASUREMENTS

1. Contractor shall verify all sizes of steel structural members and fabrication and shall assume full responsibility for structural adequacy.

2. Take all necessary field measurements for existing conditions at the building to assure proper fitting and fabrication of all work.

3. All variations of existing construction shall be taken into account and properly provided for.

4. All work under this section shall be closely coordinated with that of other trades whose work affects or is affected by the work included herein.

D. SUBMITTALS

1. Shop Drawings: After taking all necessary field measurements, submit complete fully dimensioned shop drawings prepared under the supervision of and bearing the seal of a New York State Licensed Professional Engineer.

2. The contractor shall not begin work until the shop drawings are approved by Architect/Engineer and returned to the contractor with an approval stamp.

E. INSPECTION

1. Prior to installation, carefully inspect installed work of other trades and verify that such work is complete to the point where this installation may properly commence. In the event of discrepancy do not proceed with installation until such discrepancies have been fully resolved.

5B.05 FABRICATION

A. Use welding or bolting as directed by Architect/Engineer for joining pieces together. Make joints true and tight, and make connections between parts light-proof and tight. Provide continuous welds, ground smooth where exposed.

B. Construct stair units to conform to sizes and arrangements as called for and generally to match existing stairs. Provide metal framing, hangers, railings, struts, clips, brackets, bearing plates and other components for the support of stairs and platforms. Erect stair work to line, plumb, square, and true with runs registering level with floor and platform levels.

C. Form metal pans of 12 gauge structural steel sheets. Shape pans to conform to the configuration called for.

D. Construct riser and sub-tread metal pans with steel angle supporting brackets, of size as required, welded to stringers. Secure metal pans to brackets with welds. Provide platforms of the same metal and gauge as specified for pans, unless otherwise indicated.

5B.06 STAIR CONSTRUCTION

A. Metal stair work shall be of the highest standard of material and workmanship and shall be fabricated and erected by a firm specializing in work of this character, in accordance with the details of the National Association of Architectural Metal Manufacturer's, "Metal Stairs Manual Revised Edition (1974)."

B. Pan-type stairs shall be all welded construction in accordance with details shown on drawings and approved shop drawings. They shall be designed and constructed so as to safely support a minimum live load of 40 psf, minimum dead load of 30 psf for tread and platform surface. The responsibility for furnishing and erecting the stair work in accordance with this designed load shall rest with the contractor. Risers, and sub-treads should be formed of #12 gauge and platforms #10 gauge steel and welded to carrier angles.

C. The stair construction shall include stringers, headers, treads, risers, railings, clips, hangers, struts, braces and other supports and related members necessary to complete the installation. Wherever practicable concealed supporting members, braces etc. should be used.

D. All joints, connections and fastenings of the stair construction exposed and/or visible from finished areas shall be welded, shop or field primed, chipped and ground smooth. No exposed bolted and/or riveted fastenings will be accepted unless approved by Architect/Engineer.

E. Stringer ends that are exposed to view should terminate with closer plates and be attached with concealed welds. The edges shall match with the faces of stringers.

5B.07 STAIR RAILINGS AND HANDRAILS

A. STEEL

1. Steel stair railings shall be made with type of steel as indicated under materials

section above. They shall be accurately constructed, and all parts shall be assembled by welding in a first-class manner. Before painting, welds shall be ground smooth and there shall be no apparent termination of the welds.

2. Adjust railings prior to securing in place to insure proper matching at butting joints and correct alignment throughout their length.

3. Secure handrails to walls with wall brackets and end fittings. Provide brackets or malleable iron castings, with not less than 1 1/2 inches clearance from inside face of handrail to wall surface. Locate brackets at not more than 4'-6" o.c. attached with expansion bolts.

4. Provide wall return fittings at ends of rail of cast iron castings, flush-type, with the same projections as that specified for wall brackets. Secure wall brackets and wall return fittings to building construction.

B. WOOD

1. Ease all exposed edges. Handrails, when turning corners and returning to wall, shall be miter cut, doweled, glued under pressure and edge eased with a radius of approximately 3". All other splicing should be done in a similar manner and in accordance with AWI standards.

2. Secure handrails to walls with wall brackets and end fittings. Provide brackets or malleable iron castings, with not less than 3 inch clearance from inside face of handrail to wall surface. Locate brackets at not more than 4'-6" o.c. attached with expansion bolts.

C. VINYL STAIR TREADS

1. Stair treads shall be installed in strict manufacture's recommendation.

5B.08 SHOP DRAWINGS AND SAMPLES

A. Submit detailed shop drawings for approval of all fabricated items of work indicating gauges of metal, hardware, fittings, finishes, connections to adjacent work and other necessary and required details. Shop drawings shall bear the seal of a New York State Licensed Professional Engineer.

5B.09 GUARANTEES

A. Guarantee all items of work furnished and installed under this Section for (1) one year, in addition to manufacturer’s standard warranties. All guarantees to be from the date, when **Final Certificate of Occupancy** is issued from Department of Buildings.

END OF SECTION