

SECTION 05 31 00

STEEL DECKING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section describes the requirements for furnishing and installing steel decking at Parking Structure elevator override and roof stair enclosures, at infill areas, at Receiving / Kitchen and Dining Areas and as required to complete the Program.
- B. Section includes:
 - 1. Steel decking.
 - 2. Accessories, filler pieces and metal closure pieces.
- C. Related work: Structural Steel Framing: Section 05 12 00.

1.2 SUBMITTALS

- A. Dimensioned shop drawings showing section profiles, trim, detailed layout showing type and gage of steel decking, openings, sump pans (when applicable), supports, connections, welds and erection instructions. Identify welds by the AWS welding symbols. Indicate temporary shoring of decking where required.
- B. Manufacturer's calculations and supporting data demonstrating that each metal deck proposed for use conforms to the Drawings, these Specifications and the Building Code.
- C. Manufacturer's Installation instructions indicating specific installation sequence and special instructions.

1.3 QUALITY ASSURANCE

- A. Welders' qualifications:
 - 1. Welding shall be done only by welders currently certified for welding of lightgage metal.
 - 2. Qualification of welders and duration of qualification period in compliance with applicable requirements of AWS D1.3. Recertify and replace, with qualified welders, welders producing unsatisfactory welds, even though they have passed qualification tests.
 - 3. Testing for recertification is Developer Design/Builder's responsibility.
- B. Design criteria:
 - 1. Fire rating: Be responsible for obtaining UL and Building Department approval of the decking, when used as a part of the assembly indicated on the Drawings in which fire resistive construction ratings are required.
 - 2. Design: In compliance with the following reference standards.
 - a. SDI, Design Manual for Composite Decks, Form Decks and Roof Decks.
 - b. AISI, Specification for the Design of Cold-Formed Steel Structural Members, and AISC, Manual of Steel Construction.

- C. Shoring: Unless noted otherwise on the Drawings, the decking doesn't require shoring, except that when the weight of the wet concrete fill is expected to exceed the deck manufacturer's published data for safe capacity and allowable deflection, the Developer Design/Builder shall provide temporary shoring until concrete fill has attained its 28-day strength.

1.4 HANDLING

- A. Labeling: Label each unit or bundle of metal decking, which is UL classified, to show manufacture, testing and inspection.
- B. Protection: Work showing dents, creases, burrs in cells, deformations, weathering or other defects affecting its use will not be accepted.
- C. Storage: Store units off the ground with one end elevated to permit drainage. In wet or damp weather, cover with waterproof tarpaulins to avoid rusting.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel for decking and closure strips: ASTM A 653, with minimum yield strength of 33,000 psi, with a G 60 zinc coating.
- B. Miscellaneous steel shapes: ASTM A 36.
- C. Galvanizing repair paint: Tneme-Zinc 90-97 by Tnemec Co., Amercoat 68HS by Ameron Protective Coating Division, or MZ-4 by Valspar Corp.
- D. Welding rods:
 - 1. Complying with the recommendations of the metal deck manufacturer and AWS D1.1.
 - 2. Submit the manufacturer's recommendations to the County's Representative prior to starting the installation.

2.2 FABRICATION

- A. Decking:
 - 1. Of the types and profiles indicated on the Drawings formed in lengths to span 3 or more supports, unless otherwise indicated, with flush, telescoping, or nested ends, end laps and nesting side laps.
 - 2. Composite decking shall have either mechanically fixed shear devices such as embossments, holes or welded buttons, or inverted triangular shaped ribs.
 - 3. Fabricate decking supporting waterproofing membrane, roofing and elastomeric coating with vent tabs protruding and staggered in the low flutes, 12 in. maximum o.c., or other joint deformation, to provide a minimum 1.5% openings (uniformly distributed) of the total deck area for relief of vapor pressure; do not use vent tabs to support mechanical equipment.
- B. Form end closures, column flashing, access hole covers and cover plates of sheet metal.

- C. Hangers for suspended ceilings:
 - 1. Lip tabs or integral tabs. Nothing shall be hung from metal decking itself or from tabs punched directly in metal decking.
 - 2. Provide slots or holes punched in decking for installation of pigtail wires.
- D. Form roof sump pans from a single piece of galvanized sheet steel of same quality as deck units.
 - 1. Thickness shall be a minimum of 14-gage before galvanizing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supports to receive steel decking and associated work and conditions under which work will be installed.
- B. Examine conditions and measurements affecting the work of this Section at site.
- C. Correct satisfactory conditions in a manner complying with the Contract Documents and acceptable to the Installer.
- D. Do not start work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Install decking and accessories in compliance with their manufacturer's recommendations and the approved shop drawings.
- B. Coordinate and cooperate with other trades in locating decking bundles to prevent overloading of structural framework.
- C. Place decking on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting steel supports not less than 2in. before fastening permanently.
- D. Do not stretch or contract side lap interlocks. Place decking in straight alignment for entire length of run of cells and with close alignment between cells at ends of abutting deck units.
- E. Cut and fit decking and accessories around other work projecting through or adjacent to the decking as shown on the Drawings. Provide neat, square and trim cuts.
- F. Place roof sump pans over openings in steel deck and weld to top decking surface.
 - 1. Space welds at 12inches o.c. maximum with a minimum of one weld at each corner.
 - 2. Cut opening in bottom of pan for roof drain accurately.
- G. Do not use decking for storage or working platforms until permanently secured.
 - 1. Coordinate protection and bracing of metal decking used as runway for transporting concrete.
 - 2. Verify that decking manufacturer's directions for protection are followed.

3.3 FASTENING

- A. Fasten interlocking side closures as noted on the Drawings.

3.4 OPENINGS

- A. Provide openings required for work of other trades and which are not indicated on Drawings only upon approval of the County's Representative as to size, location and reinforcement. The cost of such openings and reinforcement for same shall be borne by the Developer Design/Builder.
- B. Provide additional steel reinforcement and closure pieces as required for strength, Continuity of decking and support of other work as shown.
- C. Reinforce openings as Indicated on the Drawings.
- D. Fabricate metal closure strips, for openings between decking and other construction, of sheet steel of same quality as deck units. Form to configuration required to provide tight-fitting closures at open ends of cells of flutes and sides of decking.
 - 1. Adjusting plates: Provide in locations too narrow to accommodate full-size deck units and install as recommended by the deck manufacturer and approved on the shop drawings.
 - 2. End closures: Provide metal cover plates or joint tape at joints between decking sheets to be filled with concrete to prevent concrete leakage.
 - 3. Column flashing: Provide between floor decking and columns which penetrate the deck. Field cut flashing to fit, and tack weld to decking and columns.
 - 4. Access hole covers: Provide to seal holes cut in decking to facilitate welding of decking to structural supports.

3.5 ATTACHMENTS

- A. Coordinate location, spacing and type of connections required to attach wood nailers, suspended ceilings and similar items to decking.
- B. Drill decking as shown and as required by approved shop drawings.

3.6 CLEANING AND TOUCHING-UP

- A. Remove slag from welds, clean to bright metal and touch-up with zinc-rich paint; also clean and touch-up with zinc-rich paint raw edges of deck cut for openings.
- B. Welds over which concrete fill will be placed need not be slagged and painted.

3.7 FIELD QUALITY CONTROL

- A. The Testing Agency employed by the County will inspect, and test where applicable, all field welding.
 - 1. Testing Agency will furnish qualified inspectors.
 - 2. Tests and inspections shall comply with Code requirements, as amended by Building Department regulations.

3. Testing Agency will inspect welds visually when operators are making welds at commencement of this work and after this work is completed, for penetration of weld metal, fusion, and general ability of operator. Correct defective welds in compliance with applicable provisions of AWS D1.1.
 4. Testing Agency will be required to confirm welder's qualifications and to certify in writing upon completion of this work that the welding has been performed in compliance with Drawings and Specification requirements, including the use of AWS qualified procedures, the manufacturer's recommended use of automatic equipment, and the use of preheat, if required, and with all applicable requirements of regulatory agencies having jurisdiction.
- B. The Testing Agency will report on the results of the inspection.
- C. In addition to the survey required of the structural steel frame In Section 05120, the Developer Design/Builder's surveyor shall also provide a survey of the steel decking, to verify dimensions, elevations and tolerances. Deck edge closure strips shall be within 1/4 inch of the theoretical location shown on the Drawings.

END OF SECTION