SECTION 05315

COMPOSITE FLOOR SYSTEM

PART 1 – GENERAL

1. SECTION INCLUDES
    a. This specification covers the design, manufacture and use of the Vescom Composite Floor System.

2. RELATED WORK
    a. Section 03300- Cast in Place Concrete
    b. Section 05120- Structural Steel
    c. Section 05311- Steel Roof Deck

3. CODES
    a. Design and fabrication shall be in strict accordance with the Vescom Structures Inc. Specifications, conforming to ASTM standards, and shall meet or surpass the requirements of the Steel Joist Institute (SJI), the Steel Deck Institute (SDI), the Building Officials and Code Administrators International, Inc. (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Code Congress (SBCC).

4. DESIGN
    a. The design of the joist shall be in accordance with the American Institute of Steel Construction (AISC) specifications. The slab shall be designed in accordance with the American Concrete Institute (ACI) specifications.

5. SHOP DRAWINGS
    a. Detailed erection drawings shall be submitted to the Architect for approval showing the number, type, locations, spacing, anchorage and mark of all material that is required for proper installation. All material shall be identified with its mark which also appears on the bill of material.
    b. Fabrication shall begin only with final approved drawings.

PART 2 – PRODUCTS

1. MATERIALS
    a. Top chord members shall consist of two hot rolled angles with Fy = 50,000 PSI minimum. The vertical projection of the top chord into the concrete will have

deformations running its entire length. The deformations will project a minimum of 3/32”, giving the top chord its required mechanical connection.

b. Bottom chord members shall consist of equal size angles with Fy = 50,000 PSI minimum.
c. Web members shall consist of hot rolled bars or angles with Fy = 50,000 PSI minimum.
d. All Vescom composite joists and composite truss girders and accessories shall receive one shop coat of paint which shall comply with applicable Steel Joist Institute specification of latest adoption. (Vertical projection of upper chord left unpainted.)
e. Metal floor deck shall be formed from cold rolled steel leaving a minimum yield strength of 80,000 PSI. Decking shall be furnished uncoated (black), unless noted otherwise.
f. Slab reinforcement shall be welded wire fabric in rolls of 5’ x 150’ (size as shown on drawings) with Fy = 60,000 PSI minimum.
g. Concrete shall have minimum ultimate compressive strength fc = 3,000 PSI at 28 days.

2. FABRICATION
    a. Fabrication shall be in accordance with the Vescom Structural Systems specifications and standard practices.
    b. All welding materials and methods used for fabrication shall be in strict accordance with the requirements of the Steel Joist Institute (SJI).
    c. Vescom composite joists shall be fabricated with cambers as per Vescom Structures Inc. specifications.

3. QUALITY CONTROL
    a. Vescom joists shall be manufactured only in a fabricator’s facility having a continuous quality control program.
    b. Vescom joists shall be inspected by the manufacturer before shipment to insure compliance of material and workmanship with the requirements of the Specifications.

PART 3 – EXECUTION

INSTALLATION OF THE VESCOM STRUCTURAL SYSTEM SHALL BE IN STRICT ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS:

1. GENERAL
    a. Care shall be exercised to avoid damage through careless handling during unloading, storing and erecting.

b. No construction loads shall be placed within a bay until all Vescom joists, trusses, and deck have been properly welded.
c. During the construction period, the contractor shall provide means of adequate distribution of concentrated loads so that the carrying capacity is not exceeded.

2. VESCOM COMPOSITE JOISTS
    a. Any errors in fabrication must be reported immediately to Vescom. We will advise methods of correction. No corrections are to be made without our consent. No back charges will be honoured unless this procedure is followed.
    b. All joists shall be lifted in the upright position during unloading and erection.
    c. All joists shall be erected plumb, and at the proper spacing.
    d. Joists must be welded to support members before any decking is placed (minimum 3/16” weld by 1 ½” each side of bearing seat).
    e. Joists shall have a minimum bearing of 2 ½” on steel and 3 ½” when installed directly on masonry and concrete. Bearing conditions on masonry and concrete shall be in accordance with the provisions of ACI 530 and ACI 530.1.
    f. Tie joists and trusses shall be bolted or welded at the top chords only. After the concrete has been placed, the bottom chord members shall be welded to the columns. (Do not remove any guy wires until all top and bottom chords have been secured.)

3. VESCOM FLOOR DECK
    a. Deck bundles shall be placed centered on the supporting girders (never directly bearing on composite joists).
    b. Deck bundles shall not exceed a maximum of 100 sheets. Care should be exercised to avoid overloading the supporting elements when placing bundles of steel deck on the building frame.
    c. Place sheets with edges up, center the end laps over the support and nest the side lap one-half corrugation.
    d. Minimum bearing shall be 1 ½” unless otherwise shown.
    e. Decking shall be welded at each deck lap and one weld in between (24” o.c. maximum).
    f. Welding washers shall be used on all deck units with metal thickness less than 22 gauge, welding washers shall be minimum 16 gauge and have a nominal 5/8” diameter arc puddle weld. Screwing and mechanical fastening systems are also permitted.
    g. All field welding shall be in strict accordance with the requirements of the American Welding Society AWS).
    h. The deck segments shall be welded upon placement.
    i. When spans exceed 5”-0”, side laps are to be fastened at mid-span either by welding or screwing.

j. Loose bundles of decking must be tied down to prevent the wind from blowing the sheets.
k. Do not use any damaged sheets.
l. If sheets become damaged after placement, such as dents in the corrugations, remedy immediately by welding another sheet directly over the damaged one. (Extra sheets are supplied on all jobs).
m. Steel deck shall be stored off the ground with one end elevated to provide drainage and shall be protected from elements with a ventilated waterproof covering.

4. WELDED WIRE FABRIC
    a. Welded wire fabric shall conform to ASTM A 185-72, standard specifications for welded steel wire fabric for concrete reinforcement, Fy = 60,000 P.S.I. minimum. Lapping shall be in accordance with the provisions of ACI 318-71.
    b. Welded wire fabric shall be rolled out perpendicular to the Vescom Composite Joists, allowing proper drape.

5. CONCRETE
    a. Concrete shall not be deposited in large bucket loads in concentrated areas over Vescom Composite Joists.
    b. Slab openings must be a minimum of 6” from the Vescom Composite Joists.
    c. Pours should be broken off perpendicular to the top chord wherever possible. Pours may be broken off parallel to joists only at the mid-span between two joists.