

HALF-FILLED GRID DECK

****From Hartford (Wilder) STP 1444(35)**

- xx. DESCRIPTION. This work shall consist of designing, fabricating, transporting, and installing half-filled grid decking, including installing all joints between panels, and performing any modifications to the panels as necessary to ensure proper installation, at the locations indicated in the Plans and as directed by the Engineer.
- xx. MATERIALS.
- (a) Concrete. Concrete shall conform to the requirements of HIGH PERFORMANCE CONCRETE, LIGHTWEIGHT of Section 900.
 - (b) Steel. Steel used in the work shall conform to the requirements of Section 506 and the *AASHTO LRFD Bridge Design Specifications*. Steel shall be galvanized after fabrication in accordance with the requirements of AASHTO M 111M/M 111.
 - (c) Reinforcing Steel. Reinforcing steel shall conform to the requirements of REINFORCING STEEL of Section 900.
 - (d) Shear Connectors. Shear connectors shall conform to the requirements of Section 508.
 - (e) Bolts and Fasteners. Bolts and fasteners shall be either galvanized or stainless steel. Galvanized bolts shall conform to the requirements of Subsection 714.05. Stainless steel bolts shall conform to the requirements of ASTM F 593, Type 304, UNS 30400.

A Type A Certification shall be furnished in accordance with Subsection 700.02.
- xx. DESIGN REQUIREMENTS. The design and structural details of the steel grid deck system shall be prepared, signed, stamped, and dated by a licensed Professional Engineer (Structural or Civil) and shall meet the following requirements:
- (a) Steel grid decking shall be designed in accordance with the latest *AASHTO LRFD Bridge Design Specifications* and the 2010 VTrans Structures Design Manual. The Structures Design Manual is available on the Agency's website at the following address:

http://www.aot.state.vt.us/progdev/Documents/Structures/Structures_Design_Manual.pdf.
 - (b) Deflections shall be checked in accordance with AASHTO 2.5.2.6.2, without consideration of pedestrians.
 - (c) Reinforcement for shrinkage and temperature stresses shall be provided near the surfaces of the concrete.
 - (d) Shear connectors shall be provided on the interface between the deck and all stringers and/or floorbeams and shall be designed in accordance with AASHTO 6.10.10.

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xx. GENERAL FABRICATION REQUIREMENTS. Material furnished under this Section shall conform to the requirements of Section 506.

xx. SUBMITTALS. The Contractor shall submit Working Drawings, including all connection details, manufacturer's specifications, erection procedures, load tables, and calculations to the Structures Engineer for approval in accordance with Section 105.

The Contractor shall include the information required under Subsection 506.18(a) pertaining to erection or installation, including design and details for lifting attachments.

xx. CONSTRUCTION REQUIREMENTS.

(a) General. The Contractor shall take care to protect the steel grid deck from damage prior to installation. Any damaged steel shall be touched up with an approved zinc rich primer at no additional cost to the Agency.

(b) Grid Panels. The grid panels shall be designed and detailed in order to accommodate the finish grade and cross slope shown on the Plans. No overpour concrete, which will increase the weight of the deck system above the limits specified, will be allowed in order to accommodate the finish grade and cross slope.

Adjacent deck panels shall match in elevation with each other, within the tolerance shown on the approved Working Drawings. If this tolerance is not met, the Contractor shall adjust the panels as indicated in the procedure shown on the approved Working Drawings. The Contractor shall make all final adjustments in the elevation through the use of the leveling devices.

Each panel shall have a minimum of four attachments to each supporting element. The design of the fasteners and leveling devices for the grid deck panels, to be included in the submittal, shall include the proposed construction sequence and construction loads.

If full-width deck panels are not used in each bay, the longitudinal joint between panels shall be connected with positive, full moment and shear transfer, connections. All connections shall, at a minimum, be designed for strength, service, and fatigue loads at the connection.

(c) Concrete. A minimum of 63 mm (2.5 inches) of concrete cover shall be provided above the main steel in the grid deck system. The minimum concrete cover shall be designed and detailed in accordance with AASHTO Section 5.12.3.

An additional 13 mm (0.5 inch) of concrete shall be poured above the grid deck concrete as a wearing surface. This concrete shall be in excess of that required for design, but shall be poured integrally with the concrete below it.

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The surface of all joints and haunches shall be free of any material such as oil, grease, or dirt which may prevent bonding of the superstructure concrete.

All concrete shall be poured in-place. No precast deck panels will be allowed.

The Contractor shall provide testing equipment as specified in Section 631 for Class LW concrete.

xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Half-Filled Grid Deck) to be measured for payment will be the number of square meters (square feet) of grid deck installed in the complete and accepted work.

xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Half-Filled Grid Deck) will be paid for at the Contract unit price per square meter (square foot). Payment will be full compensation for preparing and submitting required Working Drawings; furnishing, detailing, handling, transporting, and placing the materials specified in accordance the manufacturer's recommendations, including reinforcing steel, shear connectors, and concrete for deck, sacrificial wearing surface, sidewalk(s), and curb(s); for preparing the surfaces of new steel to be galvanized; for galvanizing of surfaces; for furnishing and implementing the erection plan; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

All nondestructive testing and required quality control activities will be considered incidental to fabrication, and no separate payment will be made.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.670 Special Provision (Half-Filled Grid Deck) (FPQ)	Square Meter (Square Foot)