

SCHEMATIC SECTION - SOUTH BOARDWALK

Scale: 3/8" = 1'-0"

GENERAL STRUCTURAL NOTES

General Contractor shall review and stamp all the shop drawings before submitting for review.

Field verify all existing dimensions, elevations, and conditions. Notify the Architect for direction if the actual existing conditions differ from the conditions shown or implied on the drawings.

Verify all dimensions and elevations with the Civil Drawings. The contractor shall design, provide, and maintain temporary bracing, shoring, guying, etc. and other methods as required to prevent any excessive loading and to stabilize the structural elements during construction. These methods shall remain in place until all members and final connections have been completed. The Contractor shall retain a licensed geotechnical engineer to verify that the existing soil conditions will provide a minimum net allowable total load bearing pressure of 2000 psf. Long-term settlement at this bearing pressure shall not exceed 3/4 inches. Differential settlement across the structure shall not exceed one-half of the total settlement. Notify the Architect/Engineer for further direction if the existing soil conditions are not capable of providing the defined foundation design criteria.

The boardwalk structural system is designed per the International Building Code - 2006 Edition.

The contractor shall perform all material testing and inspection requirements for compliance with the governing building code, the project specifications, the local building inspection department, and the following Structural Special Inspection Notes.

DESIGN LOADS

Building structure is designed for the following loads and criteria:

Building Occupancy Category: II

Dead: Weight of materials and construction plus weight of fixed service equipment

Live Load: Boardwalk and stairs: Floor Live Load: 100 psf

Snow: Ground snow load: Pg = 15 psf
Flat-roof snow load: Pf = 15 psf
Drifting snow load: ASCE 7-05
Snow exposure factor: Ce = 1.0
Snow load importance factor: I = 1.0
Thermal factor: Ct = 1.2

Wind: Basic wind speed (3-second gust): 90 MPH
Wind importance factor: I = 1.0
Wind exposure category: B
Internal pressure coefficient: ±0.55

SUBGRADE PREPARATION AND EARTHWORK NOTES

All subgrade preparation and earthwork shall be performed under the direction of the Geotechnical Engineer.

The Geotechnical Engineer shall approve all soil materials, monitor all earthwork operations, and perform the appropriate testing during the earthwork process. All general engineered fill material required shall be an approved soil, free of organic material and deleterious material with a liquid limit less than 45 and a plasticity index less than 20.

All fill material shall be placed in maximum 8" thick loose horizontal lifts and shall be compacted to at least 95% of Standard Proctor maximum dry density, ASTM D-698.

COMPOSITE DECKING

Composite decking shall be Docksider Planks by TimberTech or approved equal. Allow 1/8" spacing at all plank edges and end joints unless otherwise recommended by the manufacturer.

Install planks perpendicular to the existing building façade. Provide full length planks. Do not splice planks, typical. Attach composite decking to each support with 2-#8x3" stainless steel screw fasteners. Predrill holes for screw fasteners per manufacturer's recommendations.

STRUCTURAL SPECIAL INSPECTIONS

The contractor shall engage one or more qualified independent testing and inspecting agencies to perform the material testing and inspection requirements as outlined in the project specifications and this section.

Testing and inspection reports shall be furnished to the Building Official, the Architect, and the Structural Engineer. Reports shall indicate that the materials tested and the work inspected are in conformance with the Contract Documents. Discrepancies shall be brought to the attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be reported to the Building Official, the Architect, and the Structural Engineer.

The testing and inspecting agencies shall submit a final report for each type of work stating that any discrepancies noted in the testing and inspections have been corrected and that the structural work was, to the best of their knowledge, performed in conformance with the Contract Documents.

The testing and inspection program does not relieve the Contractor of any responsibility for constructing the project in accordance with the Contract Documents and for controlling the quality of construction.

The Contractor shall be responsible for the scheduling and the timely notification of the testing and inspection agencies of the need for material testing or inspections.

All work which requires testing or inspection shall be ready for testing or inspection at the time of the testing and inspecting agency's visit. No work shall be performed which would conceal items to be tested or inspected until the work has been reviewed and accepted.

The following types of work require special inspection (IBC references refer to the International Building Code edition referenced above):

1. Testing and inspection of concrete construction shall comply with IBC Section 1704.4 and IBC Table 1704.4.

- Perform sampling and testing of cast-in-place concrete as specified.
- Perform periodic inspection of reinforcing for steel size, cover, spacing, positioning, lap lengths and locations.
- Perform inspection of concrete placement for proper procedures for transporting, placing, consolidating, and finishing of concrete.
- Perform periodic inspection of concrete curing and protection procedures, including compliance with the hot and cold weather requirements defined in the specifications.
- Contractor shall maintain records of all batch reports and delivery tickets on each load of concrete delivered to the project site for periodic review by the Architect/Engineer.

2. Testing and inspection of the soils shall comply with IBC Section 1704.7 and IBC Table 1704.7.

- Perform periodic sampling, testing, and inspection of the soil type, moisture content, and compaction as specified.
- Perform periodic testing and inspection of the soils at the foundation system bearing elevation to verify the required soil bearing capacities.

2. Testing and inspection of the wood construction shall comply with IBC Section 1704.6.

- Contractor shall maintain records of all material and product certificates delivered to the project site for periodic review by the Architect/Engineer.

4. Testing and inspection of post-installed anchors and post-installed reinforcing bars shall comply with IBC Section 1704.13.

- Perform an initial post-installed anchor and reinforcing bar installation inspection for each type and size of post-installed anchor and reinforcing bar. Any change in the personnel performing the post-installed anchor or reinforcing bar installation shall require an initial installation inspection.
- Perform periodic post-installed anchor and post-installed reinforcing bar installation inspections during the project to verify that the anchor and reinforcing bar installations continue to be properly performed.
- Post-installed anchor and reinforcing bar installation inspections shall verify anchor/reinforcing bar type, diameter, embedment depth, spacing, adhesive type, hole dimensions, base material, hole cleaning procedures, and adherence to the manufacturer's installation instructions.
- Perform visual observation of all completed post-installed anchor and post-installed reinforcing bar installations.

CAST-IN-PLACE CONCRETE

All concrete shall have the following properties and minimum compressive strengths at 28-days.

Foofings: 3000 psi with a max. W/C ratio of 0.50
Foundation Walls: 4000 psi with a max. W/C ratio of 0.45

All concrete shall be proportioned for a 2" to 5" slump range at the point of placement.

All cement shall be Type I or II conforming to ASTM C150. Fly ash conforming to ASTM C618, Type C or F may be used to replace a maximum of 20% of the cement or 100 pounds per cubic yard of concrete, whichever is less.

All aggregate for normal weight concrete shall meet ASTM C33. Aggregates shall be proportioned such that mix design shall contain a minimum of 50% coarse aggregates by gradation requirements set forth in ASTM C33. Coarse aggregate shall meet No. 67 grading requirements.

Exterior exposed concrete shall have from 4 to 7% entrained air.

Concrete shall contain a water-reducing admixture meeting ASTM C494, Type A or F, at a dosage to provide the necessary flowability and workability within the specified slump range.

Concrete shall be in strict conformance with the current "ACI Manual of Concrete Practice".

No aluminum shall be placed in the concrete.

Chamfer all exposed edges of the concrete 3/4".

Cast-in-place concrete shall be obtained for testing per ASTM C172 and tested as follows:

- Obtain one set of four test cylinders for each day's pour of each concrete mixture less than 25 cubic yards, plus one set of four test cylinders for each additional 50 cubic yards or fraction thereof.
- Slump: One test at point of discharge per ASTM C143 for each set of test cylinders taken. Perform additional slump test on truckloads when consistency seems to have changed.
- Concrete Temperature: One test per ASTM C1064 for each set of test cylinders taken or hourly when air temperature is below 40°F or above 90°F.
- Air Content: Volumetric method per ASTM C173 or pressure method per ASTM C231 for each set of test cylinders.
- Compression Test Specimens: One set of four standard cylinders per ASTM C31 at the specified frequency.
- Compressive Strength Tests: One set of four cylinders per ASTM C39. Test one cylinder at 7-days, two cylinders at 28-days, and hold one in reserve to be tested as directed.

Personnel trained and certified in concrete sampling shall perform all concrete testing and sampling. Test results shall be submitted to the Architect, Engineer, and Contractor within 24 hours of completing tests. Concrete testing shall be performed by an approved testing agency.

Submit 3 copies of the concrete mix design to the Architect/Engineer for review prior to beginning construction.

REINFORCING STEEL

All reinforcing shall meet ASTM A615 - 60,000.

All reinforcing steel shall have adequate coverage as indicated in ACI 318 for the given exposure.

Reinforcing shall be continuous and lapped a minimum of 24 inches or 36 bar diameters whichever is greater, unless otherwise noted.

Reinforcing shall be detailed according to the ACI Detailing Manual and shall be prepared under the supervision of a professional engineer licensed to practice in the State of Kansas.

Provide 2-#5, 4'-0" longer than opening dimension, on all sides of the openings in the walls.

Provide 30 pounds of extra bars of various sizes to be used as directed. Include labor for placing same.

Provide 3-inch slab bolster with continuous bottom plate at 4'-0" maximum centers for positioning all footing bottom bars.

Mark each bundle of the reinforcing with weatherproof tags.

Submit 3 copies of the reinforcing steel shop drawings to the Architect/Engineer for review prior to beginning construction.

LUMBER

All lumber shall have the following minimum base design values:

Joists & Beams: 2x8 (Southern Pine No. 2 or better)
Fb: 925 psi Fc perp: 565 psi Ft: 550 psi
Fv: 175 psi Fc parallel: 1350 psi E: 1,400,000 psi

Joists & Beams: 2x12 (Southern Pine No. 2 or better)
Fb: 750 psi Fc perp: 565 psi Ft: 450 psi
Fv: 175 psi Fc parallel: 1250 psi E: 1,400,000 psi

Maximum moisture content shall not exceed 19%.

Joist hangers shall be used at all locations where joist and beam support by bearing is not available.

All metal connectors shall have ICBO approval and shall be installed with fasteners as specified by the manufacturer.

Wood framing member shall be connected or fastened to the supports as noted on the drawings. Where no specific fastener requirements are defined, connect members as defined in 2008 IBC, Table 2304.9.1.

Multiple 2x's used as beams shall be bolted together with 1/2" diameter bolts at 24 inches o.c. staggered.

All wood plates or ledgers above ground and attached to concrete or masonry shall be preservative treated lumber.

Preservative treated lumber shall contain 0.25 pcf chemical retention level for ACQ-C, ACQ-D, MCO, and CCA-C; 0.20 pcf chemical retention level for CBA-A; or 0.10 pcf chemical retention level for CA-B. No other type of waterborne preservative shall be used without specific approval.

All metal connectors used in contact with preservative treated lumber shall be hot-dip galvanized, Simpson Strong-Tie ZMAX, G185 coating (1.85 oz./ft²) unless approved otherwise.

All nails, screws, bolts, anchors and associated hardware installed into or in contact with preservative treated lumber shall be hot-dip galvanized per ASTM A153.

All bolted connections in lumber members shall use ASTM A307 grade bolts. All holes for bolted connections in the steel connection plates and the lumber members shall be 1/16" larger than the bolt diameter.

All noted nails shall be common wire nails with diameter and length as defined below. Any nails proposed to be used with a diameter or length that is different from a common wire nail shall be submitted for review and approval.

Modifications to the defined common nail quantity and spacing may be required with any approved nail that possess properties that are less than a common wire nail.

Nail	Diameter	Length
8d	0.131 in.	2.50 in.
10d	0.148 in.	3.00 in.
12d	0.148 in.	3.25 in.
16d	0.162 in.	3.50 in.

ENGINEERED LUMBER

Beams shall be furnished in sizes as stated on the drawings.

All members shall meet the allowable stresses and loading tables of iLevel Trus Joist or approved equal.

Parallel Strand Lumber (PSL Plus) shall be Wolmanized 2.0E Parallam Plus by iLevel Trus Joist or approved equal.

All holes for bolted connections in the steel connection plates and the engineered lumber members shall be 1/16" larger than the bolt diameter.

POST-INSTALLED ANCHORS

All post-installed anchors and post-installed reinforcing bars shall be installed per the manufacturer's installation instructions. All holes shall be drilled per the manufacturer's instructions with the required bit type and size to provide the minimum embedment length specified in the Structural drawings. All holes shall be cleaned prior to installing the anchor or reinforcing bar per the manufacturer's instructions with the brush and compressed air method or with the self-cleaning HiTi Safe Set Technology method using HiTi Hollow Drill Bit and Vacuum System.

The installation of all post-installed anchors and post-installed reinforcing bars shall be performed by personnel trained and certified by the American Concrete Institute/Concrete Reinforcing Steel Institute or trained by the post-installed anchor and/or adhesive manufacturer for the type of anchor or reinforcing bar being post-installed.

Expansion anchors installed into concrete shall be wedge anchors equal to HiTi Kwik Bolt TZ Stud Anchor or Simpson Strong-Tie Strong-Bolt 2.

Adhesive anchors or reinforcing bars installed into concrete shall use HiTi HIT-HY 200 Adhesive Anchoring System or an approved equal.

Adhesive anchors or reinforcing bars installed into solid grouted masonry, hollow block masonry, or brick masonry shall use HiTi HIT-HY 70 Adhesive Anchoring System or an approved equal.

Simpson Strong-Tie SET-XP, Simpson Strong-Tie AT-XP, and HiTi HIT-RE 500-SD are approved equal adhesive anchoring systems for adhesive anchors or reinforcing bars installed into concrete.

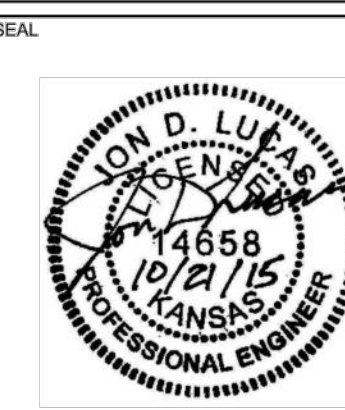
All post-installed expansion anchors must be tightened to the anchor manufacturer's recommended installation torque.

The installation of all post-installed anchors and post-installed reinforcing bars shall be reviewed and accepted by the field testing and inspection agency.

SHEET S2

DWA Dudley Williams and Associates, PA
230 Laura • Suite 200 • Wichita, KS 67211-1514
316-263-7591 • www.dwase.com
DWA Proj: 15058.00 S2 in i:\15-058\S1 10/21/2015 [JON] [1:16]

MOSLEY & ROCK ISLAND PAVING BOARDWALK STRUCTURAL DETAILS



RUGGLES & BOHM
ENGINEERING | SURVEYING | LANDSCAPE ARCHITECTURE | GOVERNMENT
204 NORTH MAIN WICHITA, KANSAS 67202 P (316) 264-4000 F (316) 264-4621 WWW.RUGGLESANDBOHM.COM
PROJECT NUMBER: 472-85915
RIB JOB NO.: 4531
DWG. SCALE: As Noted

DATE	OCT. 2015
DESIGN	JL
DRAWN	JL
REVIEW	
SHEET	15
OF	59