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GENERAL STRUCTURAL NOTES

General Contractor shall review and stamp all the shop drawings before submitting for review.
Field verify (FV) 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 Architectural Drawings.
See the Architectural Drawings for the exact dimensions for openings in the walls, roof, and floor systems.
Verify all mechanical and electrical opening sizes and locations with the mechanical and electrical contractors.
No pipes, sleeves, or etc. shall pass through the beams or columns unless indicated on the plan.
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 general, mechanical, and electrical contractors shall be responsible for the design of all embeds, inserts, anchors, and supplemental framing systems required for the support of the architectural, mechanical, and electrical systems which are not detailed on the structural drawings.
Do not hang or attach any architectural, mechanical, or electrical elements or systems from the metal roof deck or any joist bridging unless specifically approved otherwise.

The building structural system is designed per the International Building Code – 2018 Edition.
The owner and/or 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.
Structural steel and metal deck erection shall comply with OSHA Standard 29 CFR Part 1926, Subpart R and all other governing regulations. Structural steel suppliers and fabricators shall incorporate the requirements of this standard into the materials fabricated and supplied on this project.

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 2500 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.

DESIGN LOADS

Building structure is designed for the following loads and criteria:

Risk Category: III

Dead: Weight of materials and construction plus weight of fixed service equipment
- Assumed roof dead load: 15 psf – existing north lockers and pressbox
- Assumed floor dead load: 75 psf – pressbox

Live:
- Roof live load: 20 psf (non-reducible)
- Floor Live Load:
- Pressbox: 100 psf
- Exit facilities: 100 psf

Snow:
- Ground snow load: Pg = 15 psf
- Snow load importance factor: Is = 1.1
- Snow exposure factor: Ce = 1.0
- Lockers
  - Thermal factor: Ct = 1.0
  - Flat roof snow load: Pf = 12 psf
  - Low-slope roof minimum snow load: Pm = 17 psf
  - Slope factor, South Locker: Cs = 1.0
  - Sloped roof snow load: Ps = 12 psf
  - Drift surcharge snow loads: ASCE 7-16
- Pressbox Stadium
  - Thermal factor: Ct = 1.2
  - Flat roof snow load: Pf = 14 psf
  - Low-slope roof minimum snow load: Pm = 19 psf

Rain: Rain intensity: i = 3.9 in/hr

Wind:
- Basic wind speed (3-second gust): V = 120 MPH Ultimate; Vasd = 93 MPH Nominal
- Ground elevation factor: Ke = 0.95
- Wind exposure category: C
- Internal pressure coefficient: ±0.18

Seismic:
- Seismic importance factor: Ie = 1.25
- Site class: D
- Mapped spectral response accelerations: Ss = 0.091 S1 = 0.055
- Spectral response coefficients: Sds = 0.097 Sd1 = 0.088
- Seismic Design Category: B
- Analysis procedure: Equivalent lateral force
- Basic seismic-force resisting system: Ordinary reinforced masonry shear walls
- Response modification factor: R = 2.0
- Seismic response coefficient: Cs = 0.061
- Design base shear: V = 0.061xW

STRUCTURAL SPECIAL INSPECTIONS

One or more qualified independent testing and inspecting agencies shall 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 or are not 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.
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. Inspection of fabricators shall comply with IBC Section 1704.2.5.
2. Testing and inspection of steel construction shall comply with IBC Section 1705.2, IBC Table 1705.2.3, American Institute of Steel Construction (AISC) Specification for Structural Steel Buildings 360, and Steel Deck Institute (SDI) Standard for Quality Control and Quality Assurance for Installation of Steel Deck.
   a. Submit material test reports, manufacturer's certifications, product data sheets, welding procedure specifications, welding personnel performance qualification records, fabricator/erector quality control manual, fabricator/erector inspector qualifications as specified. Contractor shall maintain same for review by Architect/Engineer as indicated in AISC 360 Chapter N.
   b. Submit AWS performance qualification records for personnel performing shop fabrication or field erection welding.
   c. Perform visual inspection of the fabricated or erected steel and steel joist framing to verify compliance with the construction drawings, including member location, bracing, stiffeners, bridging, and connection types.
   d. Perform visual inspection of all shop fabrication and field erection welds.
   e. Perform ultrasonic inspection of all partial or complete joint penetration welds during the shop fabrication and field erection.
   f. Perform continuous inspection of all fillet welds greater than 5/16" during the shop fabrication and field erection.
   g. Perform visual inspection of all snug-tightened (Type ST) bolted connections.
   h. Observe the pre-installation verification testing required for pretensioned bolted connections defined in the Research Council on Structural Connections (RCSC) Specification for Structural Joints Using High Strength Bolts, Section 7.
   i. Perform visual inspection of all bolted connections using tension control bolts at slip-critical (Type SC) bolted connections and pretensioned (Type PT) bolted connections.
   j. Perform visual inspection of the placement of anchor rods and embed plates in concrete and concrete masonry. Verify diameter, grade, type, length, and embedment of anchors prior to placing concrete or grout.
   k. Perform visual inspection and bend testing of headed stud shear connectors in compliance with AWS D1.1, Section 7.
   l. Perform visual inspection of the metal floor and roof deck welding and/or fastener installation.
3. Testing and inspection of concrete construction shall comply with IBC Section 1705.3 and IBC Table 1705.3.
   a. Perform sampling and testing of cast-in-place concrete as specified.
   b. Perform periodic observation of formwork and reinforcing for size, cover, spacing, positioning, lap lengths and locations.
   c. Perform periodic inspection of concrete curing and protection procedures, including compliance with the hot and cold weather requirements defined in the specifications.
   d. 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.
4. Testing and inspection of masonry construction shall comply with the Level 2 quality assurance requirements of TMS 402 Section 3.1 and TMS 602 Section 1.6 Table 3 and 4.
   a. Periodically verify the proportions of site prepared mortar and grout.
   b. Periodically verify the masonry construction complies with the site tolerances defined in TMS 602 Section 3.3F.
   c. Perform periodic inspection of the mortar joint construction.
   d. Perform periodic inspection of the reinforcing steel grade, type, size, placement and positioning and the block core cleaning and preparation.
   e. Perform continuous inspection of the grout placement for proper consolidation, reconsolidation, and placement of the grout lift heights.
   f. Periodically verify the type, size, and location of anchors and embeds for anchorage of masonry to other construction.
   g. Periodically observe the preparation of the mortar specimens per ASTM C780 and grout specimens per ASTM C1019 for testing and as specified.
5. Testing and inspection of precast concrete construction shall comply with IBC Section 1705.3 and IBC Table 1705.3. All precast structural framing members shall be fabricated by a PCI-certified plant who participates in PCI's plant certification program.
   a. Perform field inspection and testing of all precast concrete member connections.
   b. Field inspection and testing of all precast concrete member welded connections shall comply with the defined welding inspection and testing criteria under steel construction.
6. Testing and inspection of the soils shall comply with IBC Section 1705.6 and IBC Table 1705.6.
   a. Perform sampling, testing, and inspection of the soil type, exposed subgrade, moisture content, lift thickness, and compaction as specified.
   b. Perform periodic testing and inspection of the soils at the foundation system bearing elevation to verify the required soil bearing capacities.
7. Testing and inspection of post-installed anchors and post-installed reinforcing bars shall comply with IBC Section 1705.1.1 and IBC Table 1705.3.
   a. Perform an initial installation inspection for each type and size of post-installed anchor and reinforcing bar. Any change in the personnel performing the installation shall require an initial installation inspection.
   b. Perform periodic inspections to verify that the installations continue to be properly performed.
   c. Installation inspections shall verify anchor/reinforcing bar type, diameter, embedment depth, spacing, adhesive type and expiration date, hole dimensions, base material, hole cleaning procedures, tightening/installation torque, maximum impact wrench torque rating, and adherence to the manufacturer's printed installation instructions.
   d. Perform visual observation of all completed post-installed anchor and post-installed reinforcing bar installations.
   e. Perform continuous installation inspections for all post-installed anchors and reinforcing bars that are installed in horizontally or upwardly inclined orientations to resist sustained tension loads.

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.
Subgrade preparation shall include the removal of all existing slabs, foundations, pavement, and stripping the exposed surface to a minimum 6" depth to remove all surface vegetation, organic material, existing fill material, and other deleterious material or unsuitable soil material encountered.
After the site preparation work has been completed, proof roll the exposed subgrade in the presence of the Geotechnical Engineer to identify any areas of soft or unstable material. Remove any unsatisfactory material and replace with suitable material as directed by the Geotechnical Engineer.
Scarify, moisture condition, and compact the top 8" of the exposed subgrade prior to starting the engineered fill placement operations. Moisture condition the scarified soils to at least 3 percentage points above the soils optimum moisture content and compact to a minimum of 95% of the maximum dry density as determined by the Standard Proctor, ASTM D-698.
Provide a minimum 4-inch thick zone of granular base material below all slab on grade floor areas. The clean granular drainage base material shall be a well-graded aggregate meeting the ASTM D448 No. 57 material.
Provide a minimum 18-inch thick zone of LVC material below the zone of granular base material at the slab on grade floor areas. The low volume change (LVC) zone material shall be an approved soil, free of organic material and deleterious material. Cohesive soils shall have a liquid limit less than 40 and a plasticity index between 5 and 15. Silty gravel such as KDOT AB-3 is an acceptable LVC material.
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.
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.
Cohesive soils shall be placed at a moisture content between optimum and 3 percent above their optimum moisture content. The specified moisture content shall be maintained in the soils until the floor slab has been placed.

CAST-IN-PLACE CONCRETE

Concrete shall have the following properties and minimum compressive strengths at 28-days.
- Footings and Foundation Walls: 3000 psi
- Interior Floor Slabs: 3500 psi
- Exterior Slabs: 4500 psi
- See Civil Drawings for Pavement

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 be in strict conformance with the current "ACI Manual of Concrete Practice".
No aluminum shall be placed in the concrete.
Slabs on earth shall be 4 inches thick with 6x6-W2.1xW2.1 welded wire reinforcement unless otherwise noted.
Contraction joints or construction joints in slabs on grade shall be spaced to divide the slab into panels not to exceed 225 square feet. The longer dimension of each panel shall not exceed the shorter dimension by more than 20 percent.
All saw-cut joints in slab on grade floors shall use an early entry dry-cutting sawing system.
Do not install saw-cut joints in elevated slabs on metal deck.
Provide concrete bases for the mechanical equipment. All shall be 4 inches thick on top of floor slabs on grade with 6x6-W2.1xW2.1 welded wire reinforcement, unless otherwise noted.
No electrical conduit shall be cast in a structural concrete system or concrete slabs on metal deck without approval from the Architect/Engineer.

REINFORCING STEEL

Welded wire reinforcement (WWR) shall meet ASTM A1064. Lap splice all welded wire reinforcement the cross wire spacing plus 2 inches. Furnish all welded wire reinforcement in flat sheets.
Reinforcing shall meet ASTM A615 - 60,000, unless noted otherwise.
Weldable reinforcing bars shall meet ASTM A706 - 60,000. Use E80xx electrodes for the welding of all A706 reinforcing bars, or as required to comply with AWS D1.4.
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 corner lap bars to match in size and spacing of all wall, trench footing, and grade beam horizontal bars. Corner bars are not required in the wall footings, unless specifically indicated.
Fan main reinforcing around openings in the structural members. Do not field cut bars unless the Architect's approval is obtained.
Provide 2-#5, 4'-0" longer than opening dimension, on all sides of the openings in the slabs and walls.
Provide 100 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 grade beam bottom bars and all footing bottom bars.
Provide bar supports for all bars in slabs or mat footing cast on grade at a maximum of 4'-0" in each direction.
Provide bar supports for all bars in elevated slabs on deck at a maximum of 4'-0" in each direction.
Mark each bundle of the reinforcing with weatherproof tags.
Welding of all reinforcing bars shall conform to AWS D1.4, "Structural Welding Code - Reinforcing Steel".

PRECAST CONCRETE

The precast fabricator shall design all precast members, reinforcing, embeds and connection hardware for the following loads and criteria:
- Dead Load: Self weight of precast members
- Superimposed Floor Dead Load: 5 psf
- See the "Design Loads" section for live load, snow load, wind load, and seismic design criteria.

Computations for the design of the precast members and connections shall be prepared and sealed by a professional engineer licensed to practice in the State of Kansas and shall be submitted for review along with the shop drawings.
Concrete used in precast members shall have a minimum 28-day compressive strength of 5000 psi unless a higher compressive strength is required to meet the design requirements.
Precast concrete shall be in strict conformance with the current PCI "Code of Standard Practice for Precast Concrete".
The defined depth, thickness, or size of the precast concrete members shall be maintained unless specifically approved otherwise.
The design of prestressed concrete members shall comply with Class U requirements in accordance with Section 24.5 of ACI 318 for all building components unless noted otherwise.
Non-prestressed concrete members shall contain the minimum reinforcing as defined by ACI 318.
The precast connection details shown indicate the type of connection detail expected to be implemented. The final connection details shall be the responsibility of the precast manufacturer.
All reinforcing in the precast members shall have adequate coverage as defined in ACI 318 for the given exposure.
Field completed welded and bolted connections shall be reviewed and accepted by the field inspection and testing agency prior to the installation of subsequent work.
The contractor and the precast supplier shall be responsible for the special coordination between the precast members and other structural framing members and systems.
Embeds, bolts, threaded rods, connecting hardware, and other related items shall be galvanized per ASTM A123 for members and ASTM A153 for connection elements where they occur on the exterior of the building.
Provide 1/8"x3" continuous Korolath multi-polymer plastic bearing strips along all bearing support edges of the precast slabs.
Properly clean all galvanized areas damaged by welding or abraded areas and apply zinc rich galvanizing repair paint according to ASTM A780.

CONCRETE MASONRY

Concrete masonry units (CMU) shall comply with ASTM C90, have a minimum compressive strength of 2000 psi on net area at 28-days, and be made of lightweight concrete aggregate unless noted otherwise.
Mortar for use in concrete masonry shall be Type S and comply with ASTM C 270 proportion or property specification.
Concrete masonry shall have a net area compressive strength (f'm) of 2000 psi minimum.
Grout shall comply with ASTM C 476 with a minimum 28-day compressive strength of 2500 psi. Grout solid all reinforced vertical block cores, bond beams, cores with anchors, and cores below grade.
Provide vertical CMU reinforcement as indicated on the plan and sections. Bars for typical lift shall be shop cut for 4'-0" lifts plus a minimum 48 bar diameters lap. Field cut bars for top lift and non-typical lengths.
Vertical reinforcement bars in CMU walls shall be placed and held in the center of the block cores, unless noted otherwise. Provide vertical masonry reinforcing galvanized bar positioners at 48 inches o.c. at each vertical reinforcing bar. Provide bar positioners to match the wall thickness, bar size, and bar position as required.
Provide dowels from the foundation to match in size and spacing of all vertical CMU reinforcement.
Provide standard hook at the end of all vertical masonry reinforcing into top bond beam at roof bearing elevation.
Provide at least one vertical rebar at each end, side of control joints, jambs, corner, and intersection of all CMU walls. Size of rebar is to match the size of typical vertical reinforcing. If the wall does not contain any vertical CMU reinforcing, provide 1-#4 vertical at the described locations.
Provide 2-#4's continuous for all bond beams unless otherwise indicated on the plan. Furnish in shop lengths and field cut. See the plans (including architectural), sections and notes for the locations.
Provide one corner bar to match each horizontal bond beam.
Provide an 8-inch deep bond beam with top Elevation 108-8 at all exterior CMU walls.
Provide an 8-inch deep bond beam at the top of all interior and exterior CMU walls, unless detailed otherwise.
Provide horizontal joint reinforcing in all concrete masonry unit walls at 16 inches o.c. unless noted otherwise.
Provide masonry control joints at a maximum spacing of 24'-0" o.c. unless noted or shown otherwise.
Coordinate all control joint locations with the Architect/Engineer. Control joints shall not occur below or directly adjacent to the joist, beam or lintel bearing points. Locate a minimum of 24 inches from jambs of wall openings.
Fill all beam bearing pockets in masonry walls solid with grout. Provide temporary forms on the inside or exposed face of the wall flush with the face of the wall to retain grout placement.
Lintels shall be built into the masonry walls over wall openings as the wall is being constructed. Closely coordinate the location and elevation of all openings in the masonry walls with the architectural, mechanical, and electrical drawings.

STRUCTURAL STEEL

Structural steel shall meet the latest AISC "Specification for Structural Steel Buildings."
The typical steel framing connection details shown on the drawings represent the general type of connection detail expected to be implemented in the connection design, unless specifically approved otherwise.
The steel fabricator and detailer shall be responsible for the final detailing of all steel framing connections which are not explicitly detailed on the contract documents based on the defined beam or bracing end reactions or member forces. The submitted shop drawings shall clearly show and note all shop and field bolting and welding requirements and the final connection details.
All member loads, reactions, and moments defined on the drawings are ASD, service-load level, unless noted otherwise.
Steel framing members shall only be spliced at locations shown on the design drawings or as shown on and approved on the shop drawings.
Structural steel shop drawings shall be prepared under the supervision of a professional engineer licensed to practice in the State of Kansas.
Steel plates and shapes shall meet ASTM A36 except wide flange sections shall meet ASTM A992, Fy = 50 ksi.
Structural steel tubing shall meet ASTM A500, Grade B or C, Fy = 50 ksi and structural piping shall meet ASTM A53, Grade B, Fy = 35 ksi.
Beam and column connections shall be made with ASTM F3125, Grade A325 (Type 1) bolts and accessories. Connections shall be designed as snug-tightened (Type ST) bolted connections, unless noted otherwise.
Headed studs and shear connectors shall meet ASTM A108 and A29, Grade 1015-1020, and AWS D1.1, Type B.
Unheaded anchor rods shall be ASTM F1554, Grade 36 or ASTM F1554, Grade 55 (Supplement S1).
Threaded steel rods shall meet ASTM A307, Grade B; ASTM F1554, Grade 36; or an approved equal or greater strength threaded rod. Threaded rods cast in concrete or post-installed in concrete or masonry shall be thoroughly cleaned of all surface oils.
Provide 3/8" plate washers above all oversized holes (hole diameters greater than 1/16" larger than anchor diameter) in the column base plates. Provide standard hole size in plate washers.
Anchor rods set in concrete shall be furnished with double nuts and shall be set with a template.
Provide standard size holes for all bolts and anchors in steel framing members unless noted otherwise (1/16" larger hole than diameter of bolt or anchor).
Where oversized holes are required or desired in steel framing members to accommodate the drill bit size on post-installed anchors, provide a 3/16" thick plate washer at each post-installed anchor location with a standard hole or 1/16" larger hole than the anchor diameter in the center of the plate washer. After the anchors and the steel framing members have been installed, add the plate washer on each anchor prior to installing the nut and tightening the anchor. After the anchor has been properly tightened, weld the plate washer to the steel framing member with a 3/16" fillet weld along each vertical edge of the plate washer.
All beams bearing on masonry directly supporting the roof framing systems shall be positively anchored to the bearing walls with anchor rods (or an equivalent method) to resist uplift forces.
Provide an angle frame to support the metal deck at all openings greater than 9" x 9".
Provide an angle frame below the perimeter curb of all mechanical roof top equipment and around the deck openings below the mechanical equipment. Where the equipment perimeter curb is perpendicular to the roof joists, provide L4x4x1/4 between the joists and below the curb. Where the equipment perimeter curb is parallel to the roof joists, provide L4x4x1/4 between the joists at a maximum spacing of 6'-0" o.c. and provide L4x4x1/4 between the angles and below the curb. The contractor shall coordinate all mechanical unit sizes and locations. The perimeter curb shall be directly connected to the angle framing to resist all imposed loading on the roof top equipment. Where applicable, connections through the metal roof deck to the perimeter angle beneath the curb shall use shims for solid bearing at the metal deck flutes. The contractor shall be responsible for coordination with the mechanical contractor for the connection of the roof top equipment curbs to the angle framing.
Welding shall conform to AWS D1.1, "Structural Welding Code - Steel". All welds shall be AWS prequalified welded joints. No unauthorized welds will be accepted.
E70xx electrodes shall be used for all welding, unless noted otherwise.
Use E80xx electrodes for the welding of all ASTM A706-60,000 weldable reinforcing bars or as required to comply with AWS D1.4.
Steel lintels shall be provided over all the openings in the masonry walls, unless otherwise detailed.
See Lintel Schedule for lintel requirements indicated on the drawings.
Provide lintels as indicated below for openings where not indicated in the Lintel Schedule:

Span:				
	0'-0"	to	2'-0"	8" deep bond beam w/ 2-#4
	2'-1"	to	3'-0"	3-1/2x3-1/2x1/4 angle
	3'-1"	to	4'-8"	4x3-1/2x5/16 angle
	4'-9"	to	6'-3"	5x3-1/2x3/8 angle
	6'-4"	to	8'-0"	6x3-1/2x3/8 angle
	8'-1"	up		W8x24 with 1/4" continuous plate

Note: Furnish one angle for each 4-inch width of wall. Lintels shall have a minimum of 8 inches of bearing on concrete masonry at each end.

Not all masonry openings that require lintels are shown on the structural drawings. Refer to the architectural and mechanical drawings for the size and location of additional openings in the masonry walls.
Galvanize all steel lintels in exterior masonry walls.
Provide solid grouted masonry units below bearing of all lintels, beams, or etc. Grout block cores with 2500 psi grout.
Field completed welding and bolted connections shall be reviewed and accepted by the field inspection and testing agency prior to the installation of subsequent work.
Galvanized structural steel shall conform to ASTM A123 for members and ASTM A153 for connection hardware.
Hot-dip galvanize steel framing members as specified where specifically noted on the drawings. Provide venting relief holes as required but locate on the bottom side or at similar non-visible locations where the members are exposed on the exterior of the building. Show or note the locations of venting holes on the shop drawing submittal.
Non-metallic shrinkage-resistant grout shall meet ASTM C 1107.

NON-COMPOSITE METAL FORM DECK

Metal deck shall be 1-1/2" minimum, 22 gage, form deck, with the following section properties:
Ip = 0.173 in⁴/ft In = 0.139 in⁴/ft Sp = 0.177 in³/ft Sn = 0.167 in³/ft Va = 2626 lb/ft
Deck shall be galvanized and shall conform to ASTM A924 and/or A653, Fy = 50 ksi, with a minimum G90 coating.
Deck shall be connected to supports with size 12 screw fasteners at a maximum fastener spacing of 12 inches. Provide size 10 screw side lap fastener between supports at 18 inches o.c.

COLD-FORMED STRUCTURAL FRAMING

Cold-formed structural framing members shall be in accordance with ASTM C955 and shall have engineering properties calculated in conformance with the AISI "Specifications for the Design of Cold-Formed Steel Structural Members".
Cold-formed structural framing members shall be installed to conform with ASTM C1007.
Cold-formed structural framing members and accessories shall have a minimum protective coating equal to G60 galvanized finish. Properly clean the welded or damaged area and apply zinc-rich paint to all areas where the galvanized finish is damaged.
All steel shall conform to one of the following ASTM Standards: ASTM A653, A875, A792, or A463.
All 33 and 43 mil products shall be formed from steel with a minimum yield of 33,000 psi.
All 54, 68 and 97 mil products shall be formed from steel with a minimum yield of 50,000 psi.
Stud and "C" joist sections shall have with nominal 1-5/8" flanges and a minimum 1/2" return, unless noted otherwise.
"Z" purlin sections shall have with nominal 2-1/2" flanges and a minimum 1" return, unless noted otherwise.
Members shall be of depth and mil thickness as indicated on the plan and sections.
Track sections shall meet or exceed the mil thickness of the stud members with nominal 1-1/4" flanges, unless noted otherwise.
Framing components shall be cut squarely for attachment to perpendicular members.
Studs or joists used in lintels and horizontal or sloped framing members shall be un-punched, unless noted otherwise.
Load bearing studs shall have a minimum of 10-inch unpunched length at the top and bottom of each stud unless recommended otherwise by the stud manufacturer.
All studs in load bearing walls must be fully seated into the top and bottom track.
Provide web stiffeners, connection angles, and miscellaneous hardware required to complete all the connections.
Provide wall stud bridging spaced at 4'-0" maximum on centers in the exterior and load bearing walls, for full height of walls, including height of parapet.
Fasten the bridging member to each stud with clip angle and screw fasteners. Install 2 screw fasteners between clip angle and stud and between clip angle and bridging member.
Provide deflection track at the top of all non-load bearing stud walls where the top of wall abuts the bottom of the structure.
Fastening of framing components shall be with self-tapping screws or welding of sufficient size to insure the strength of the connection.
Welds shall be performed by operators qualified in accordance with Section 6.0 of the American Welding Society's "Structural Welding Code - Sheet Metal" (AWS D1.3).
Attach studs to track with a minimum of one screw per stud flange, unless otherwise noted.
Anchor base track to floor/foundation with 0.157"Ø powder actuated fasteners at 16 inches o.c.; embed 1-1/2" into the concrete.

POST-INSTALLED ANCHORS

Post-installed anchors and post-installed reinforcing bars shall be installed per the manufacturer's printed installation instructions. Holes shall be drilled with the required bit type and size to provide the minimum embedment length specified in the Structural drawings. Holes shall be cleaned prior to installing the anchor or reinforcing bar with the brush and compressed air method or with the manufacturer's proprietary drill bit and dust extraction 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 being used.
Post-installed anchor types shall be as follows:
- Expansion anchors installed into concrete shall be Hilti Kwik Bolt TZ2, Simpson Strong-Tie Strong-Bolt 2, or DeWalt Power-Stud+ SD2 anchors or an approved equal.
- Expansion anchors installed into solid grouted masonry shall be Hilti Kwik Bolt TZ2, Simpson Strong-Tie Strong Bolt 2, or DeWalt Power-Stud+ SD1 anchors or an approved equal.
- Adhesive anchors or reinforcing bars installed into concrete shall use Hilti HIT-HY 200 Adhesive Anchoring System or an approved equal. Hilti HIT-RE 500 V3, Simpson Strong-Tie SET-3G, DeWalt AC200+, and DeWalt Pure 110+ are approved equal adhesive anchoring systems for adhesive anchors or reinforcing bars installed into concrete.
- Adhesive anchors or reinforcing bars installed into solid grouted masonry, hollow block masonry, or brick masonry shall use Hilti HIT-HY 270 Adhesive Anchoring System or an approved equal. Adhesive anchors installed into hollow block or brick masonry shall use screen tubes.
- Screw anchors installed into concrete shall be Hilti KH-EZ, Simpson Strong-Tie Titen HD, or DeWalt Screw Bolt+ anchors or an approved equal.
- Screw anchors installed into solid grouted masonry shall be Hilti KH-EZ, Simpson Strong-Tie Titen HD, or DeWalt Screw Bolt+ anchors or an approved equal.

A piston plug injection procedure approved by the adhesive manufacturer shall be used for the injection of adhesive into all holes greater than 10 inches in depth.
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.

SPECIAL REQUIREMENTS AT FOUNDATION SYSTEMS AND STRUCTURAL FRAMING SYSTEMS

A. SLEEVES OR BLOCKOUTS IN TRENCH FOOTINGS
   1. Sleeves or blockouts 10 inches or greater in any direction must be approved prior to installing in any trench footings.
   2. Locate sleeves or blockouts where the edge of the opening closest to the top or bottom of the trench footing is 12 inches or greater unless specifically approved otherwise.
   3. Provide 2-#5 horizontal bars, 4'-0" longer than the opening dimension and centered on the opening, above and below the trench footing openings, one bar each face. Provide one additional trench footing stirrup placed with 2 inches to 3 inches each side of the trench footing sleeve or blockout for openings greater than 6 inches.
   4. No sleeves or blockouts shall occur within the columns or pilasters cast integral with the trench footings.
   5. Provide a minimum of 12 inches of concrete between the adjacent sleeves or blockouts unless specifically approved otherwise.
   6. Cored openings shall meet the same requirements as sleeved openings.
B. EMBEDS, ANCHORS AND INSERTS IN STRUCTURAL MEMBERS AND SLABS
   1. The general, mechanical, and electrical contractors shall be responsible for the design of all embeds, inserts, anchors, and supplemental framing systems required for the support of the architectural, mechanical, and electrical systems which are not detailed on the structural drawings.
   2. Do not hang or attach any architectural, mechanical, or electrical elements or systems from the metal joist bridging unless specifically approved otherwise.
C. ELECTRICAL CONDUIT IN STRUCTURAL MEMBERS AND SLABS
   1. No conduit shall be placed in the structural members or slabs without approval from the electrical engineer and the structural engineer.
D. MECHANICAL OR ELECTRICAL OPENINGS, SLEEVES, CONDUITS, OR CORED HOLES IN CONCRETE MASONRY WALLS
   1. All lintels shall be built into the concrete masonry walls as the walls are being constructed.
   2. Do not locate any masonry openings, sleeves, or cored holes directly below any joist or beam bearing plates unless specifically approved otherwise.
   3. Mechanical duct openings in the concrete masonry walls that occur below the elevated floor slabs or roof structures shall be located such that the opening and the lintel occur completely below the bond beams at the floor or roof framing member bearing elevation, unless specifically approved otherwise.
   4. Locate the top of all horizontal sleeves or cored holes in the concrete masonry walls that occur below the elevated floor slabs or roof structures to provide a minimum 8 inch deep bond beam lintel below the floor or roof framing member bearing elevation and above the sleeves or cored holes unless approved otherwise.
   5. Locate all horizontal sleeves or cored holes in the concrete masonry walls to provide a minimum of 8 inches of concrete masonry between adjacent sleeves or cored holes which are 6"Ø or less in size and to provide 16 inches of concrete masonry between adjacent sleeves or cored holes which are greater than 6"Ø in size, unless approved otherwise.
   6. Do not place any conduit in vertically reinforced and/or grouted masonry cores, unless specifically approved otherwise. Vertical conduit may pass through horizontal bond beams, excluding bond beam lintels and bond beam lintel bearing, unless noted otherwise.
   7. Horizontal electrical conduit placed in masonry block walls shall have a maximum conduit size of 3/4 inch (0.922" maximum outside diameter) and the installation shall comply with the subsequent defined requirements. No conduit with a conduit size greater than 3/4 inch (0.922" maximum outside diameter) shall be installed horizontally in masonry walls unless specifically approved otherwise.
   8. Do not place any horizontal conduit in horizontal bond beams, unless specifically approved otherwise.
   9. Horizontal conduit within masonry walls shall be confined to the cores between the vertically reinforced and/or grouted masonry cores to the greatest extent possible. The 8 inch deep masonry course containing the horizontal conduit shall be grouted solid for the full horizontal length of the conduit.
   10. A single 3/4 inch conduit (0.922" maximum outside diameter) may pass horizontally through a solid grouted and/or vertically reinforced core at the jamb of a wall opening where required to connect to an electrical device above or below the wall opening.
   11. Notify Architect/Engineer of any required conduit installations which do not comply with the above criteria prior to the construction of the masonry wall.

MKEC
Wichita, KS • 316.684.9600

PHASE 8 INDOOR FACILITY & STADIUM IMPROVEMENTS

STRYKER SPORTS

WICHITA, KANSAS

DEBREE E. MOORE
NUMBER
13958
11-23-2021
KANSAS
PROFESSIONAL ENGINEER

GENERAL STRUCTURAL NOTES

PROJECT NO.	1701010567
DATE	NOV. 2021
SCALE	AS NOTED

DESIGNED	DRAWN	CHECKED
DM	BN MB	DM

NO.	REVISION	DATE
0	ISSUED FOR CONSTRUCTION	11-24-21

SHEET NO.
SS2.1

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