March 31, 2026

SCHEMATIC STRUCTURAL NARRATIVE

Project Name: Nathan Benderson Park Multi-Sport Facility
Address: 5851 Nathan Benderson Circle, Sarasota, FL 34235
Risk Category: III
Building Type: Threshold Building (per Florida Building Code)

GENERAL DESCRIPTION

This project consists of a two-story multi-sport facility including basketball courts, gathering areas, event spaces, and a rowing boathouse. The structure is comprised of structural steel framing supporting elevated concrete slabs and roof framing, with precast concrete wall panels forming the primary exterior enclosure and lateral force-resisting system. The building is classified as a Risk Category III structure and will require threshold inspections in accordance with the Florida Building Code.

CODES AND STANDARDS

The structural systems shall be designed in accordance with the following:

- Florida Building Code, 8th Edition (2023)
- ASCE 7-22 – Minimum Design Loads for Buildings and Other Structures
- ACI 318 – Building Code Requirements for Structural Concrete
- AISC Steel Construction Manual – 16th Edition
- PCI Design Handbook – Precast and Prestressed Concrete
- Florida Administrative Code – Threshold Inspection Requirements

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DESIGN CRITERIA

- Ultimate Wind Speed: 160 mph (3-second gust)
- Exposure Category: D
- Risk Category: III
- Enclosed Structure

FOUNDATION SYSTEM

Deep Foundations

The primary structure will be supported on deep foundations consisting of:

- Precast concrete driven piles (12x12 or 14x14)
- Reinforced concrete pile caps
- Reinforced concrete grade beams

Pile connection detailing:

- Prestressing strands shall be splayed into the pile cap
- Compression piles:
  - (2) #5 reinforcing bars epoxy-set 4 inches into the top of the pile
  - Bars shall extend into the pile cap
- Tension piles:
  - (4) #5 reinforcing bars epoxy-set 4 inches into the top of the pile
  - Bars shall extend into the pile cap

Shallow Foundations

Shallow foundations will be used for:

- Slabs on grade
- Stairs bearing on grade
- Planters less than 4 feet in height

Shallow foundations will consist of reinforced concrete spread footings, concrete wall footings, and thickened slab sections with ASTM A615 Grade 60 reinforcing.

SLABS ON GRADE

Slabs on grade will consist of:

- 4-inch thick cast-in-place concrete slab
- Placed over prepared subgrade and vapor barrier
- Reinforced with 6x6 W1.4xW1.4 welded wire reinforcement, chaired at mid-depth

Slabs shall be isolated from structural elements unless otherwise required. Saw-cut control joints shall be provided.

STRUCTURAL FRAME – COLUMNS

Structural steel columns will be provided at interior and exterior locations. Columns will be continuous from the foundation to the roof framing and designed in accordance with AISC.

ELEVATED FLOOR SYSTEMS

Exterior Elevated Floor

The exterior elevated floor system will consist of:

- Cast-in-place reinforced concrete slab
- Minimum slab thickness: 8 inches (sloped as required for drainage)
- Reinforcement:
  - (2) mats of reinforcing
  - #5 bars at 12 inches on center each way, top and bottom
- Clear cover: 1 inch at all reinforcing

Design Loads:

- Superimposed Dead Load: 30 psf
- Live Load: 100 psf

Interior Elevated Floor

The interior elevated floor system will consist of:

- 5-inch normal weight concrete slab (3-inch slab over deck)
- Supported on 2-inch composite metal deck

Framing:

- Primary framing:
  - Steel joists spaced at approximately 4’-0” to 6’-0” on center, or
  - Wide flange steel beams
- Secondary framing:
  - Wide flange steel beams

Design Loads:

- Superimposed Dead Load: 30 psf
- Live Load: 100 psf
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ROOF FRAMING SYSTEM

The roof framing system will consist of:

- Steel joists and/or wide flange steel beams
- Built-up steel girder trusses at designated locations

Girder Trusses

- Located at primary girder lines
- Composed of wide flange steel sections for both chords and web members

Roof Deck

- Steel Deck Institute (SDI) compliant

- 1.5-inch “B” deck
- 18 gauge galvanized steel

Design Loads:

- Superimposed Dead Load: 25 psf
- Live Load: 20 psf

WALL SYSTEMS

Exterior wall systems will consist of precast concrete wall panels.

Wall Construction

Typical single-story walls:

- Thickness: 7-1/4 inches
- Reinforcement:
  - Single curtain
  - #5 bars at 12 inches on center vertical
  - #4 bars at 12 inches on center horizontal

Taller walls:

- Thickness: up to 11-1/4 inches
- Reinforcement:
  - Double curtain
  - #5 bars at 12 inches on center vertical
  - #4 bars at 12 inches on center horizontal

Wall Behavior

Wall panels will support floor and roof framing, support out-of-plane loading and transmit loads to the foundation and elevated floor and roof systems, and resist in-plane shear as part of the lateral force resisting system.

Select wall panels will extend above the main roof and support framing for pop-up roof structures.

Some wall panels will act as horizontal beam elements spanning between steel columns.

LATERAL FORCE RESISTING SYSTEM

The lateral force resisting system will consist of:

- Ordinary precast concrete wall panels designed for in-plane loading

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STRUCTURAL MATERIALS

Concrete

- Typical compressive strength: 4,000 to 5,000 psi (or as required)

Reinforcing Steel

- ASTM A615 Grade 60

Structural Steel

- Wide flange members: ASTM A992
- Hollow structural sections (if used): ASTM A500 Grade B
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DELEGATED DESIGN

The following elements shall be designed by a delegated engineer licensed in the State of Florida:

- Steel joists and joist girders
- Metal deck
- Precast concrete wall panels and connections
- Any specialty cladding or façade support systems

Please contact our office with any questions or to discuss specific structural systems in further detail.

Sincerely,

SNELL ENGINEERING CONSULTANTS

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