



Structural Schematic Design Narrative The One Smithville

Austin, Texas

April 2, 2021

Project Description:

We understand this project is comprised of an extensive renovation and addition to an existing historic, three-story building located in downtown Smithville. The existing historic structure has exterior and interior load bearing masonry walls with wood timber floor structure at each floor and wood roof trusses at the roof. The existing interior structure will be completely removed including the interior load bearing masonry walls, floor framing, and roof framing with the exterior load bearing masonry walls to remain intact. A new structure will be constructed within the existing exterior masonry walls as well as a new structure attached to the north side of the building to support the elevator and stair cores.

This structural narrative provides a general overview and outline of the structural system for the purpose of assembling a preliminary budget for the proposed building and is not intended for final pricing, bidding, or construction. Fort Structures performed schematic level structural calculations to confirm the information provided and the material sizes and quantities are estimated based upon the current level of design. As such, the use of this information should include appropriate contingencies. These contingencies should include material quantity contingencies as well as general design and construction contingencies that are reasonably inferred for a design at this level based upon standard practice and experience. This narrative is based upon the drawings provided by and correspondence with Nolan Bell. Reference the attached structural drawing sheets S-001 through S-008 for additional information.

Codes and References:

The provisions of the following codes and references will be used for both design and construction of the new building.

- International Building Code (IBC), 2015 Edition
- American Society of Civil Engineers (ASCE) 7-10, Minimum Design Loads for Buildings and Other Structures.
- American Concrete Institute (ACI) 318-14, Building Code Requirements for Structural Concrete
- American Institute of Steel Construction (AISC) 360-10, Specification for Structural Steel Buildings, 14th Edition
- American Forest and Paper Association, National Design Standard for Wood Construction (NDS) 2015 Edition

Basic Material Specification

- Wood:
 - Dimensional Lumber – Southern Pine (SP) No. 2 or better
 - Pre-Engineered Wood Trusses – per truss manufacturer
 - Engineered Lumber – per manufacturer
 - Wood connectors by Simpson Strong-Tie Company
- Structural Steel:
 - Wide Flange Shapes – ASTM A992, Gr 50ksi
 - Channels, Angles, WT's, Pipes, Plates, and Miscellaneous Shapes – ASTM A36, Gr 36ksi
 - HSS Shapes – ASTM A500, Gr C, 46 ksi
- Concrete Compressive Strength (f'_c) – 28 day:
- Steel Reinforcing shall be Grade 60 per ASTM A615

Design Criteria:

- Building Type: The building shall be classified as Category II facility.
- Wind Loading: The building shall be designed for wind forces with minimum basic wind speed (3-second gust) of 115 mph, exposure factor B, and Importance factor shall be 1.0.
- Seismic Loading: Seismic design parameters are within Seismic Design Category A where seismic loading is not expected to control the lateral design of the structure.
- Snow Load: The building shall be design for snow forces of 5 psf with a max drift surcharge of 15 psf.
- Live Load: The minimum required live loading as specified in the IBC and ASCE 7-10.

Public Areas, Corridors, Lobbies, Stairs	100 psf
Assembly (Roof Deck)	100 psf
Balconies	60 psf
Residential Occupancy (Hotel Rooms)	40 psf
Partition Load	20 psf
Roof Live Load	20 psf

General Overview of Superstructure Options:

Option 1:

- Steel framed superstructure with pre-engineered wood floor trusses
- Open web steel joists (OWSJ) and concrete on corrugated metal deck at the roof deck
- Steel framed upper roof structure with pre-engineered wood roof trusses
- CMU walls at the stair and elevator cores

Option 2:

- Steel framed superstructure with open web steel joists (OWSJ) and concrete on corrugated metal deck on all accessible levels
- Steel framed upper roof structure with open web steel joists (OWSJ) and corrugated metal roof deck
- CMU walls at the stair and elevator cores

Foundation:

A site-specific geotechnical engineering report was not available at the time of this structural narrative; therefore, all the following assumed foundation elements are subject to change once a soils report has been submitted. The assumed foundation system is anticipated to be the following for both of the above-described superstructure options:

- Drilled concrete piers or concrete spread footings supporting steel columns.
- Drilled concrete piers and grade beams or concrete mat foundation at stair and elevator cores.
- Concrete slab on grade over stabilized compacted fill.
- Slab anticipated to be built over a minimum of 24" of compacted select fill.
- Compacted select fill shall extend 36" beyond the footprint of the building.
- Slab on grade is anticipated to be 4 ½" thick reinforced with #4 bars at 16" on center each direction.
- All concrete strength is anticipated to be 3000 psi.

Gravity Framing System:

The gravity framing system is anticipated to be the following:

Option 1:

- Levels 2 & 3 Framing
 - HSS6x6 steel columns.
 - Steel wide flange beam framing: approximately 6 psf.
 - Perimeter steel beams are anticipated to be attached to the exterior masonry walls periodically with steel angles and post-installed epoxy anchors.
 - 18" deep pre-engineered wood floor trusses @ 24" on center spacing.
 - 1 1/8" T&G APA rated floor decking.
- Roof Deck Framing
 - HSS6x6 steel columns.

- Steel wide flange beam framing: approximately 8 psf.
- Perimeter steel beams are anticipated to be attached to the exterior masonry walls periodically with steel angles and post-installed epoxy anchors.
- Open web steel joists (OWSJ) at 4'-0" on center spacing: approximately 3 psf.
- 3 ½" concrete topping on 9/16" corrugated metal form deck (24 gage) with 6x6-W2.9xW2.9 welded wired reinforcement.
- Upper Roof Framing
 - 6" diameter exposed steel pipe columns and HSS4x4 steel columns.
 - Steel wide flange beam framing: approximately 4 psf.
 - 16" deep pre-engineered wood roof trusses @ 24" on center spacing.
 - 5/8" plywood roof decking.

Option 2:

- Levels 2, 3, & Roof Deck Framing
 - HSS6x6 perimeter steel columns and HSS8x8 interior steel columns.
 - Steel wide flange beam framing: approximately 8 psf.
 - Perimeter steel beams are anticipated to be attached to the exterior masonry walls periodically with steel angles and post-installed epoxy anchors.
 - Open web steel joists (OWSJ) at 4'-0" on center spacing: approximately 3 psf.
 - 3 ½" concrete topping on 9/16" corrugated metal form deck (24 gage) with 6x6-W2.9xW2.9 welded wired reinforcement.
- Upper Roof Framing
 - 6" diameter exposed steel pipe columns and HSS4x4 steel columns.
 - Steel wide flange beam framing: approximately 4 psf.
 - Open web steel joists (OWSJ) at 5'-0" on center spacing: approximately 2 psf.
 - 1 ½" corrugated metal roof deck (24 gage).

Elevator and Stair Cores:

The framing system for the elevator and stair cores are anticipated to be the following for both of the above-described superstructure options:

- 8" CMU walls reinforced and fully grouted.
- CMU walls at the stair cores to be braced by the steel stair framing.
- 10" CMU walls reinforced and fully grouted at unbraced wall locations at the elevator.
- Roof framing:
 - Open web steel joists (OWSJ) at 5'-0" on center spacing: approximately 2 psf.
 - 1 ½" corrugated metal roof deck (24 gage).

Lateral Bracing System:

The lateral bracing system is anticipated to be the following for both of the above-described superstructure options:

- Steel brace frames located from the foundation level to level 2 comprised of HSS 6x6 diagonal braces.
- Moment frames comprised of steel beams, steel columns, and moment connections (MC).
- CMU shear walls surrounding the elevator and stair cores.

Miscellaneous Structural Steel:

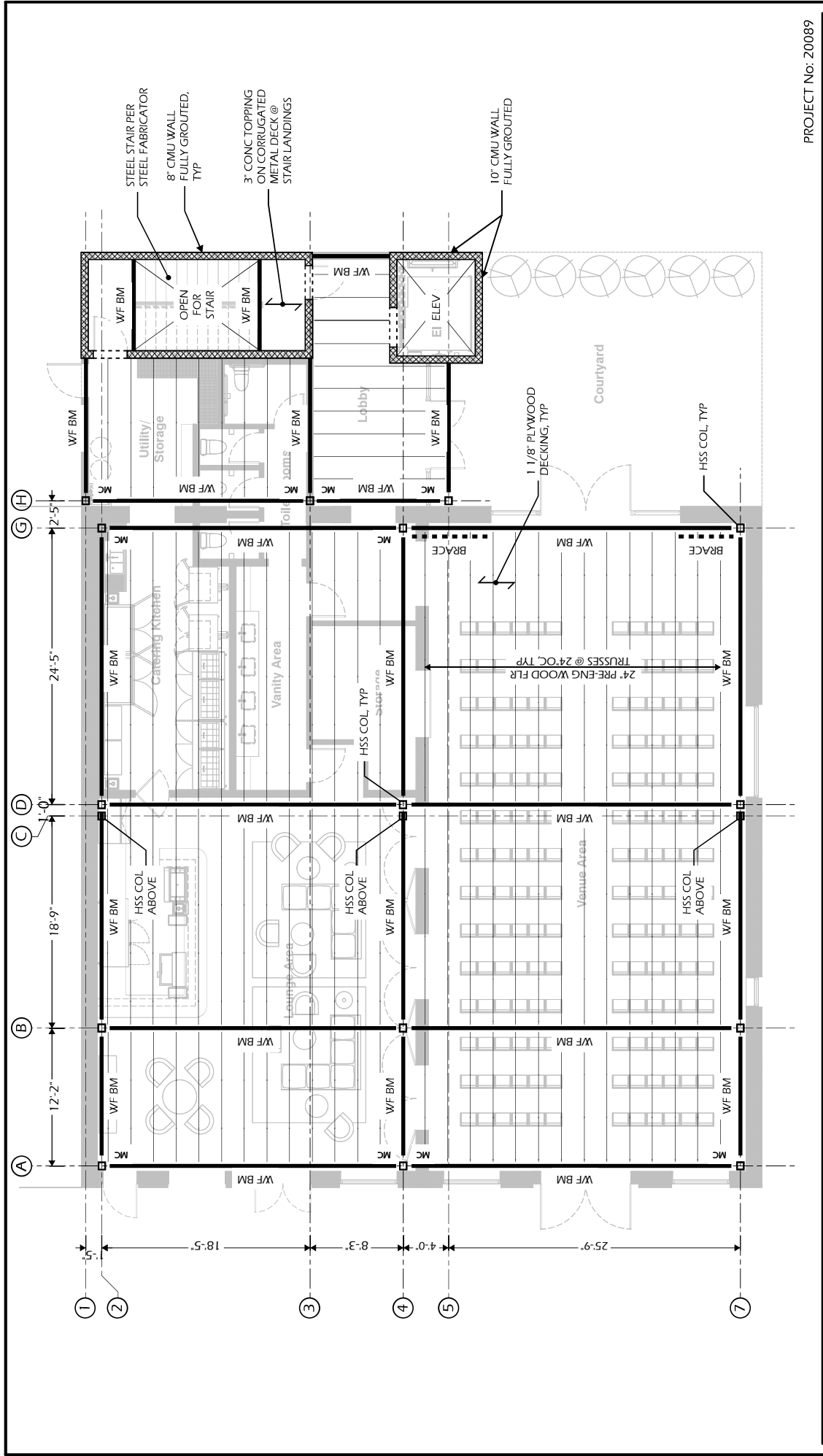
Miscellaneous structural steel elements are anticipated to be the following:

- Stairs are anticipated to be steel framed with pan-filled treads to be bidder designed.
- Steel framing elements are anticipated at elevator shafts including but not limited to hoist beams, rails, rail supports, and embeds.
- Steel angles are anticipated at various locations to support masonry veneer: approximately 2 tons.
- Curtainwall support, roof parapet support, guardrails, ladder support, mechanical equipment support, and various miscellaneous secondary structural elements.

Estimated Budgeting Quantities:

The estimated weight quantities listed above shall be utilized over the applicable horizontal projected areas and it is the responsibility of the estimator to apply appropriate contingencies that are reasonably inferred for a design at this level based upon standard practice and experience. Fort Structures has not performed a fully comprehensive review of all specific elements at this time. The structural elements outlined in these documents are not fully designed nor fully coordinated with other trades. The general contractor should review architectural, mechanical, landscaping, and interior design documents for the items that will require structural elements but are incomplete, conceptual, undefined, or missing from the structural drawings. Some examples not listed above include:

- Galvanization and/or painting of exposed structural steel.
- Construction shoring and bracing.
- Architectural and mechanical screen walls.
- Dumpsters, site walls, landscape walls, curbs, vehicle barriers and bollards, and topping slabs.



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04-02-2021

S-001
Sheet Number

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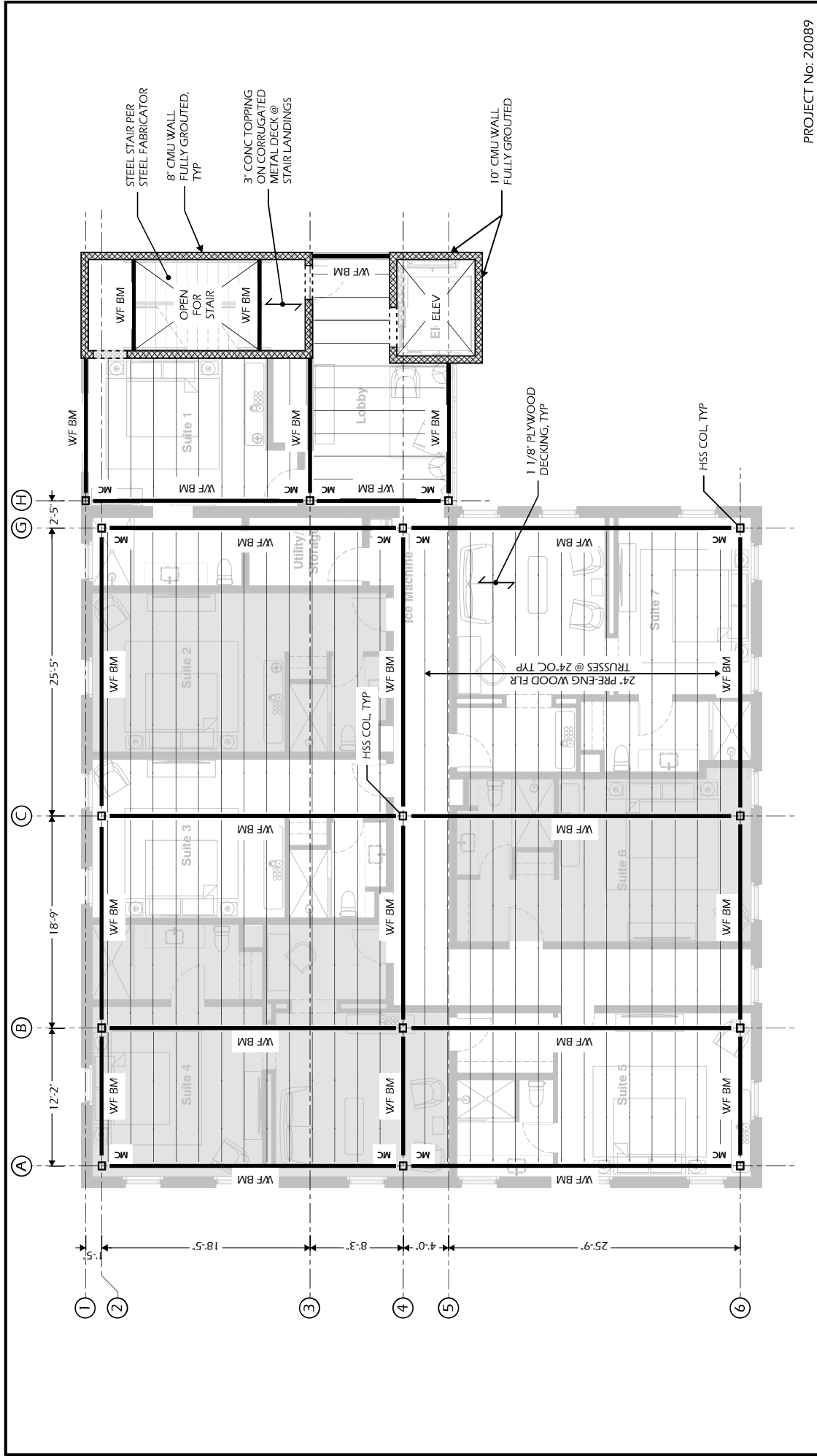
Structural Schematic Design - Option 1
Second Floor Framing Plan

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S-002

Sheet Number

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Structural Schematic Design - Option 1
Third Floor Framing Plan

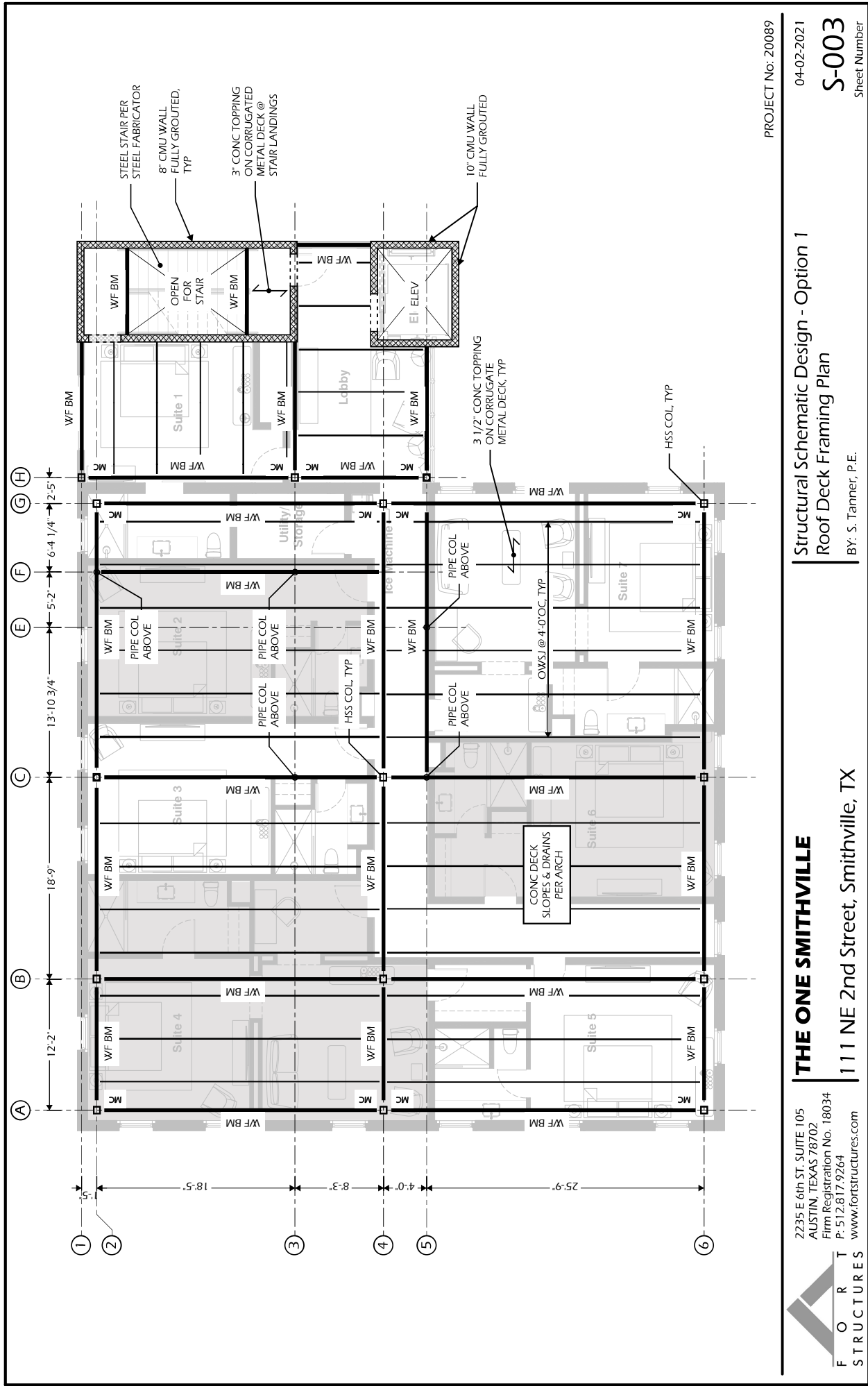
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S-003

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Structural Schematic Design - Option 1
Roof Deck Framing Plan

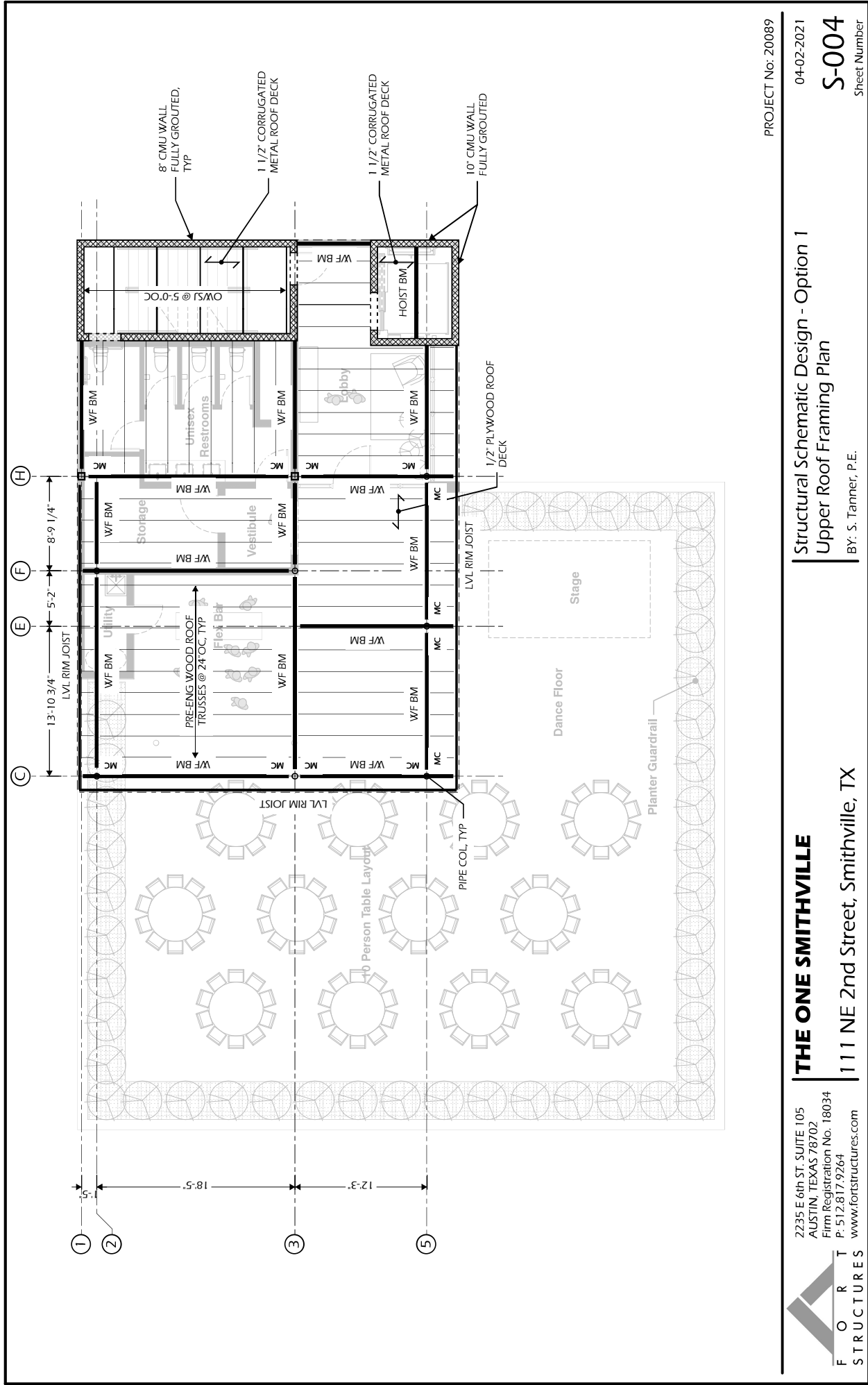
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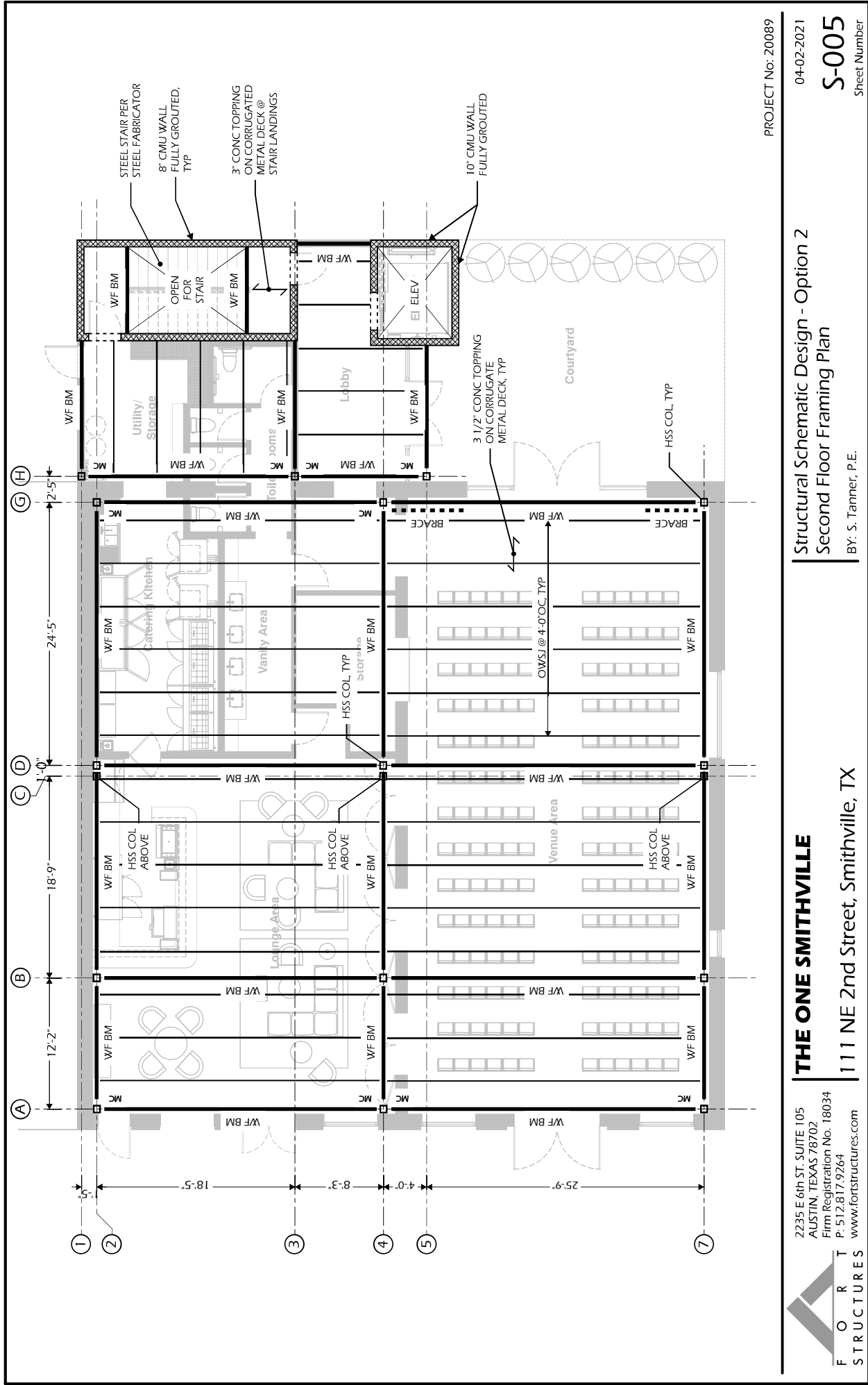
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S-004
 Sheet Number

Structural Schematic Design - Option 1
 Upper Roof Framing Plan
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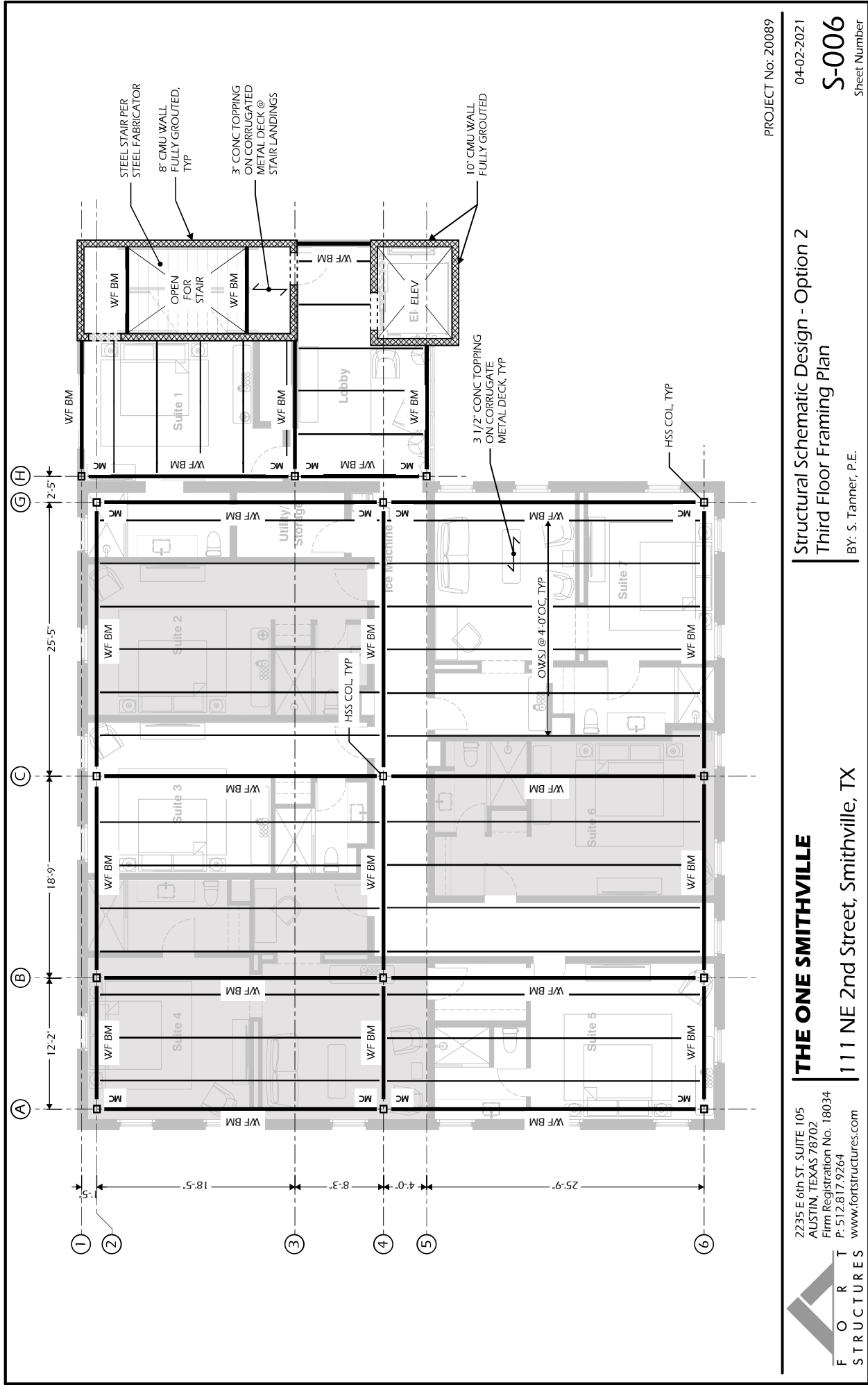
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 S-005
 Sheet Number

Structural Schematic Design - Option 2
 Second Floor Framing Plan
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S-006

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Structural Schematic Design - Option 2
Third Floor Framing Plan

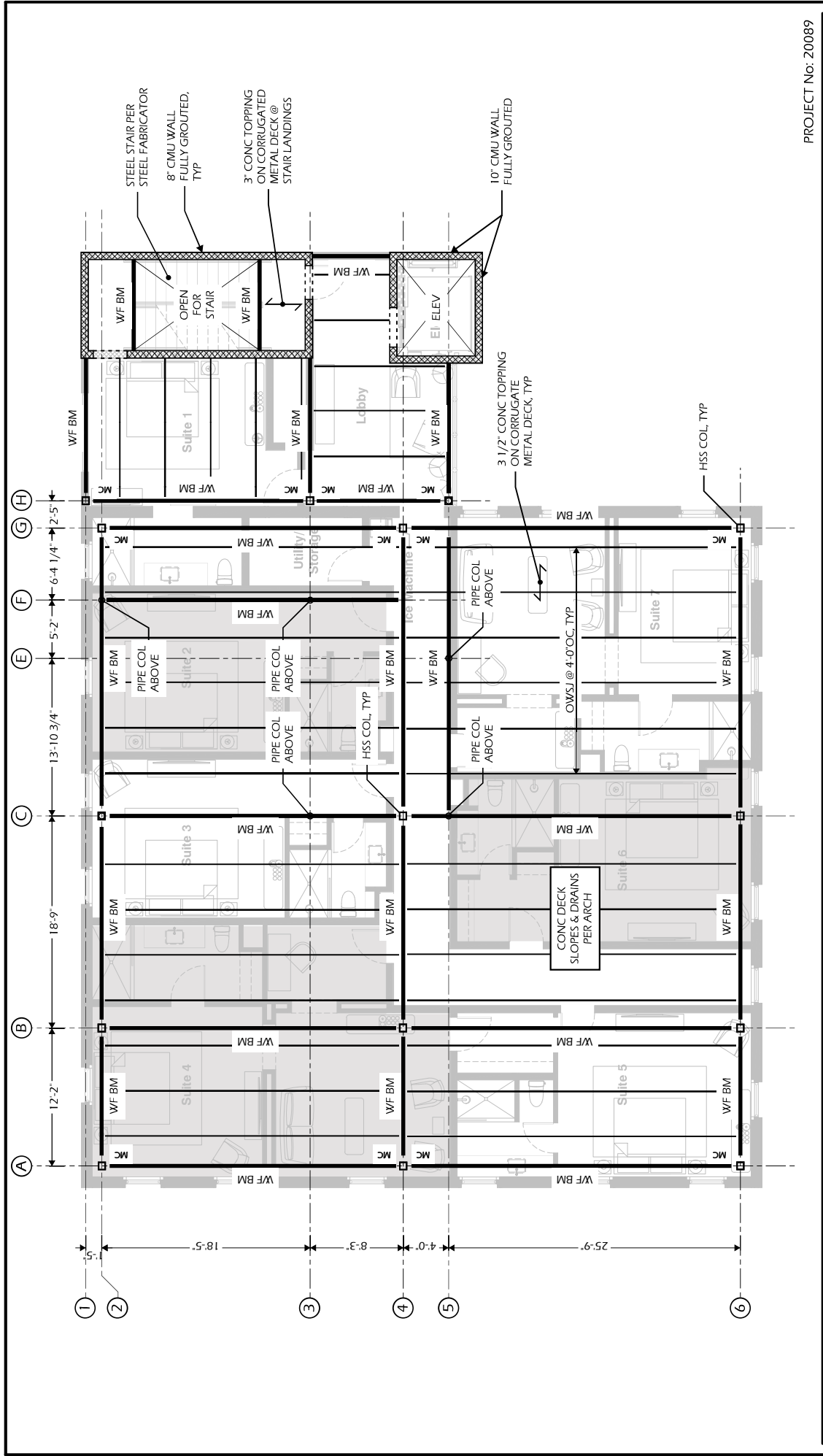
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S-007

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Structural Schematic Design - Option 2
Roof Deck Framing Plan

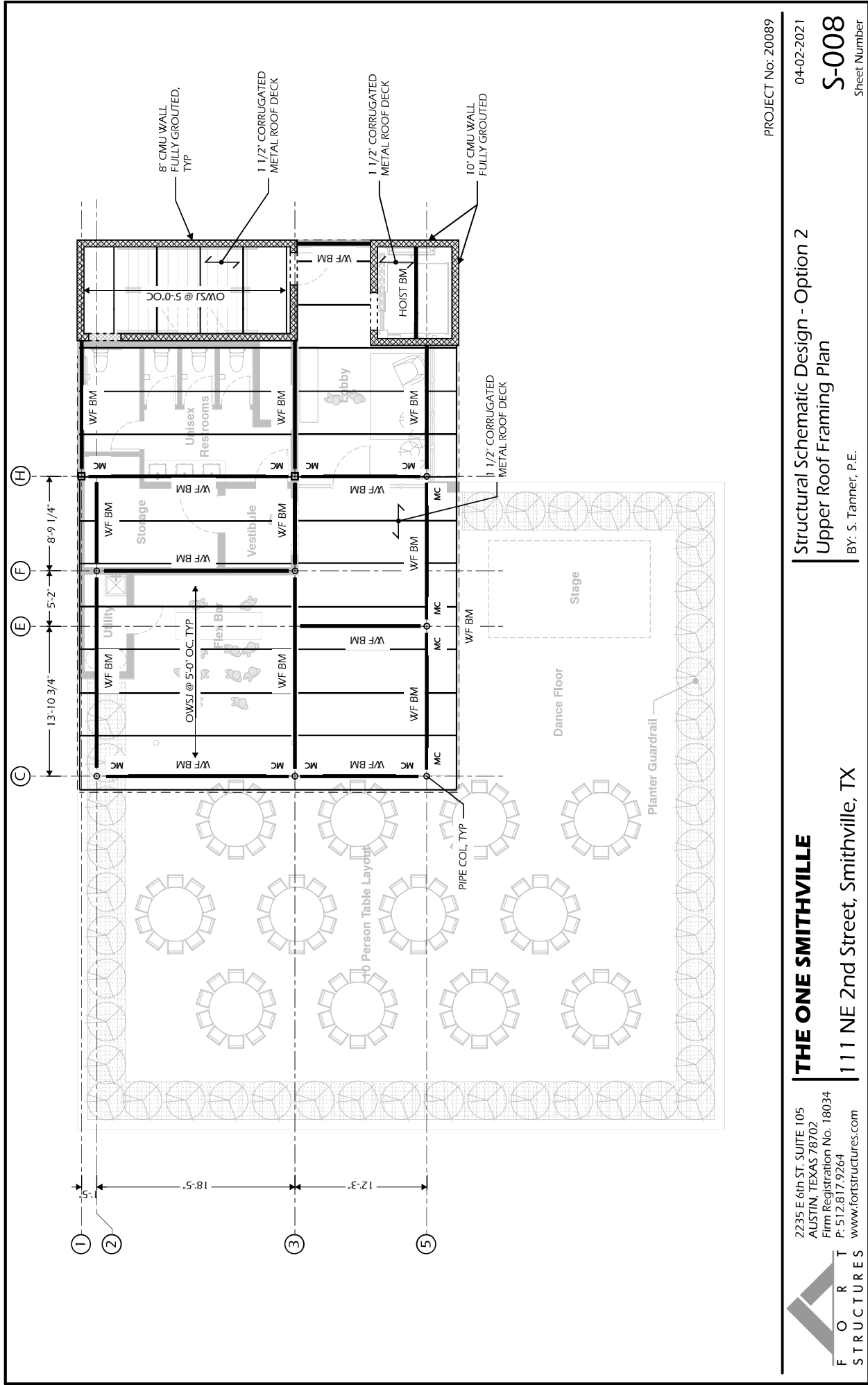
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 Upper Roof Framing Plan
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