

SEAL:

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FOR BIDDING ONLY

09/03/2020

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LIC #E28029  
PROJECT # 1P20-08

NO DATE REVISIONS



7-ELEVEN  
STORE #41559

1245 S. VOLUSIA AVENUE  
Orange City, FL 32763

PROJECT NO: 2019.0743  
DATE: MARCH 20, 2020

SO.1  
STRUCTURAL NOTES

CHECKED: BM DRAWN: RED

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**STRUCTURAL NOTES**

**CODES AND STANDARDS**

- WIND LOADS AS PER:
  - FLORIDA BUILDING CODE 2017 EDITION, FOR A 139 MPH(ULT)/108 MPH(ASD) EXPOSURE C, +/-0.18 INTERNAL PRESSURE COEFFICIENT, 1.0 IMPORTANCE FACTOR, AND RISK CATEGORY II.
  - THIS BUILDING IS DESIGNED AS AN ENCLOSED BUILDING.
- THE PROJECT WAS DESIGNED IN ACCORDANCE WITH THE:
  - FLORIDA BUILDING CODE 2017 EDITION.
  - BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318/ 2014 EDITION).
  - MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315/ LATEST EDITION).
  - MANUAL OF STANDARD PRACTICE FOR WELDING REINFORCING STEEL, INSERTS & CONNECTIONS IN REINFORCED CONCRETE CONSTRUCTION. AWS. D1.4/ 2011 EDITION.
- ARCHITECTURAL AND MECHANICAL DRAWINGS:
  - THE STRUCTURAL DRAWINGS ARE PART OF THE CONTRACT DOCUMENTS AND DO NOT BY THEMSELVES PROVIDE ALL THE INFORMATION REQUIRED TO PROPERLY COMPLETE THE PROJECT STRUCTURE. THE GENERAL CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AND COORDINATE THE INFORMATION CONTAINED IN THESE DRAWINGS WITH THE STRUCTURAL DRAWINGS TO PROPERLY CONSTRUCT THE PROJECT.
  - REFER TO ARCHITECTURAL, MECHANICAL OR ELECTRICAL DRAWINGS FOR ADDITIONAL OPENINGS, DEPRESSIONS, FINISHES, INSERTS, BOLTS SETTINGS, DRAINS, REGISTS, ETC.
  - BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK, THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS TO PROPERLY SIZE OR FIT THE WORK. NO EXTRA CHARGE OR COMPENSATION WILL BE ALLOWED BY THE OWNER RESULTING FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT.
  - DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE PROCEEDING WITH ANY WORK.
  - ALL STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LOADS LISTED ONLY AS COMPLETED STRUCTURES. THE GENERAL CONTRACTOR SHALL FULLY BRACE AND OTHERWISE PROTECT WORK IN PROGRESS UNTIL THE STRUCTURES ARE COMPLETED. THE GENERAL CONTRACTOR SHALL ALSO INSURE THAT ITS OPERATIONS AND PROCEDURES PROVIDE NO LOADING GREATER THAN THE DESIGN LOADS LISTED ON ANY MEMBER.
- SECTIONS AND DETAILS:
  - ALL DETAILS, SECTIONS AND NOTES SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS ELSEWHERE UNLESS OTHERWISE SHOWN.

**SPECIALTY ENGINEERED PRODUCTS**

- THE GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE THE PROPER SUBMISSION OF SPECIALTY ENGINEERED SHOP DRAWINGS WHICH SHALL BE SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF FLORIDA. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ASSURE THAT THE SPECIALTY ENGINEERED SHOP DRAWINGS ARE SUBMITTED IN A TIMELY MANNER SO AS TO ALLOW REVIEWS AND RESUBMISSIONS AS REQUIRED. ALL SPECIALTY ENGINEERED PRODUCTS SHALL BE DESIGNED FOR THE APPROPRIATE GRAVITY LOADS AND WIND LOADS INCLUDING UPLIFT AND LATERAL LOADS. INTERIOR SPECIALTY PRODUCTS SHALL BE DESIGNED FOR LATERAL LOADS TO ASSURE STABILITY. SPECIALTY ENGINEERED PRODUCTS SHALL BE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
  - LIGHT GAUGE METAL INCLUDING, BUT NOT LIMITED TO, SOFFITS, CLADDING, CEILING, ETC.
  - MISCELLANEOUS METALS INCLUDING STEEL STAIRS, MECHANICAL EQUIPMENT SUPPORTS, FRAMES THAT SUPPORT MACHINES, PIPES OR OTHER STRUCTURAL METAL USED FOR SUPPORT OF MECHANICAL SYSTEMS.
  - MISCELLANEOUS HANGERS, METAL FRAMES, LADDERS, RIGGING, HANGING WALLS, METAL RAILINGS, SAFETY RAILINGS, GLAZING FRAMES, CLADDING SUCH AS STONE, PRECAST, ALUMINUM, METAL PANELS, CABLE BARRIER SYSTEMS, ETC. OR ANY OTHER MISCELLANEOUS PRODUCT REQUIRED BY ANY OF THE CONSTRUCTION DOCUMENTS.

**FOUNDATION**

- ALL SITE PREPARATION AND EXCAVATION WORK IS TO BE PERFORMED IN STRICT ACCORDANCE WITH THE:
  - GEOTECHNICAL REPORT PREPARED BY ATC GROUP SERVICES, LLC DATED DECEMBER 8, 2019(PROJECT No. 2485710002).
- THE BUILDING SITE SHOULD BE EXCAVATED TO THE DEPTH AND EXTENT INDICATED IN THE SOILS REPORT. ALL SUBGRADES SHALL BE APPROVED IN WRITING BY THE SOILS ENGINEER PRIOR TO BACKFILLING.
- BOTTOM OF FOOTINGS TO BEAR ON SOIL CAPABLE OF SAFELY SUPPORTING 2500 PSF.
- TOP OF ALL FOOTINGS SHALL BE MINIMUM 24" BELOW EXTERIOR FINISH GRADE.
- EXCAVATION & BACKFILL:
  - ALL EXCAVATION SHALL BE KEPT DRY. EXCAVATE TO DEPTHS AND DIMENSIONS INDICATED. TAKE EVERY PRECAUTION TO GUARD AGAINST ANY MOVEMENT OR SETTLEMENT OF ADJACENT STRUCTURES, UTILITIES, PIPING, ETC.
  - PROVIDE ANY BRACING OR SHORING NECESSARY TO AVOID SETTLEMENT OR DISPLACEMENT OF EXISTING FOUNDATION OR STRUCTURES.
- CENTERLINE OF FOOTINGS: SHALL COINCIDE WITH CENTERLINE OF COLUMNS UNLESS OTHERWISE NOTED ON DRAWINGS.
- DIMENSIONS: ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS MUST BE VERIFIED AND COORDINATED WITH THE ARCHITECTURAL DRAWINGS BY THE CONTRACTOR BEFORE PROCEEDING WITH THE CONSTRUCTION. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR ENGINEER IN WRITING BEFORE PROCEEDING WITH ANY WORK.

**CONCRETE**

- CONCRETE ELEMENTS TO HAVE THE FOLLOWING STRENGTHS:
  - FOUNDATIONS: 3000 PSI
  - SLAB-ON-GRADE: 3000 PSI
  - ALL OTHER CONCRETE TO BE 3000 PSI UNLESS NOTED OTHERWISE.
- ALL CONCRETE SHALL BE READY MIX AND MEET THE FOLLOWING REQUIREMENTS:
  - A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS.
  - SUMPS SHALL BE 4" MINIMUM AND 6" MAXIMUM.
  - CONCRETE SHALL HAVE 2 PERCENT AIR ENTRAINMENT.
  - ALL CONCRETE TO HAVE MAXIMUM WATER/CEMENT RATIO OF 0.55.
  - JOB SITE WATER SHALL NOT BE ADDED.
- ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE ACI BUILDING CODE, THE ACI DETAILING MANUAL (ACI 315/ LATEST EDITION), AND THE SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301/ LATEST EDITION).
- SUBMIT ALL REINFORCING STEEL SHOP DRAWINGS FOR APPROVAL PRIOR TO ANY FABRICATION.
- CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS REQUIRED BY ACI SPECIFICATIONS.
- WELDED WIRE FABRIC SHALL COMPLY WITH ASTM A 1064, UNLESS OTHERWISE SPECIFIED. PLACE FABRIC 2" CLEAR FROM TOP OF THE SLAB IN SLAB ON GRADE AND SUPPORT ON SLAB BOLSTERS SPACED AT 3'-0" O.C.
- REQUIREMENTS:
  - ALL REINFORCING STEEL SHALL BE MANUFACTURED FROM HIGH STRENGTH BILLET STEEL CONFORMING TO ASTM DESIGNATION A 615 GRADE 60.
  - WME SHALL COMPLY WITH ASTM A 1084.
  - WELDABLE REINFORCING STEEL SHALL COMPLY WITH ASTM A 706.
- LAP ALL BARS MINIMUM 48 DIAMETERS UNLESS OTHERWISE NOTED ON DRAWINGS. LAP ALL WME A MINIMUM OF 12 INCHES (UNLESS OTHERWISE NOTED).
- REINFORCING BARS:
  - ALL HOOKS SHOWN IN REINFORCEMENT SHALL BE ACI RECOMMENDED HOOKS UNLESS OTHERWISE NOTED.
- CONSTRUCTION JOINTS IN STRUCTURAL SLABS AND BEAMS SHALL BE AT MID-SPAN AND KEY JOINTED WITH REINFORCING CONTINUOUS ACROSS JOINT AND ADDITIONAL SHEAR FRICTION REINFORCING. CONSTRUCTION JOINT LOCATIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. CONSTRUCTION JOINTS IN POST-TENSION SLABS SHALL BE LOCATED AND DESIGNED BY SPECIALTY ENGINEER.
- ALL MECHANICAL COUPLERS SHALL DEVELOP 1.25 FY OF REBAR IN TENSION OR COMPRESSION AND COMPLY WITH ACI 318.

**MASONRY**

- MASONRY UNITS SHALL BE
  - LOAD BEARING ASTM C 90
  - TYPE II NON-MOISTURE CONTROLLED
  - NORMAL WEIGHT
  - ALL CMU SHALL BE LAID IN A FULL BED OF MORTAR IN RUNNING BOND (U.N.O.).
- THE COMPRESSIVE STRENGTH OF MASONRY (FM) SHALL BE 1,500 PSI AS CALCULATED IN ACCORDANCE WITH ASTM C1314.
- ALL MORTAR SHALL BE IN ACCORDANCE WITH ASTM SPECIFICATION C270
  - FROM FIELD OBTAINED TEST CUBES. (MIN. OF TWO)
- GROUT SHALL BE A HIGH SLUMP MIX
  - IN ACCORDANCE WITH ASTM SPECIFICATION C478
  - HAVING A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI
  - FROM FIELD OBTAINED TEST CUBES. (MIN. OF TWO)
- ALL CONCRETE MASONRY BEARING AND SHEAR WALLS SHALL BE
  - INSPECTED BY A CERTIFIED INSPECTION COMPANY AND CONSTRUCTED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENT FOR MASONRY STRUCTURES (ACI 530/ASCE 5/TMS 402) AND "SPECIFICATIONS FOR MASONRY STRUCTURES" (ACI 530.1/ASCE 6/TMS 602)/ 2013 EDITIONS.
- PROVIDE 8" X 8" MASONRY BEAM WITH 2 #9 CONT. A EVERY WALL. ALL BEAM BEAM 8" BEYOND EDGE OF OPENING.
- PROVIDE HOT DIPPED GALVANIZED LADDER TYPE HORIZONTAL REINFORCEMENT (9 GA.) AT 16" ON CENTER VERTICAL IN ALL MASONRY WALLS. PROVIDE TIE-BOLT ANCHORS AT CONCRETE COLUMNS. ALL TIE-BOLTS SHALL HAVE TENSILE TIE FOR JOINT REINFORCEMENT. ALL TIE-BOLTS ANCHORS AND INSERTS, SHALL HAVE A MINIMUM COAT OF 1.5 OUNCES PER SQUARE FOOT (PSF) (458 G/M2) COMPLY WITH THE REQUIREMENTS OF ASTM A153, CLASS B.
- EPOXY GROUT SHALL BE NON-SHRINKING, HIGH STRENGTH, CHEEP RESISTANT, AND SHALL HAVE THE FOLLOWING MINIMUM ALLOWABLE PROPERTIES:
  - TENSILE STRENGTH: ASTM C 1107 1,500 PSI
  - FLEXURAL STRENGTH: ASTM C 1002 4,000 PSI
  - COMPRESSIVE STRENGTH: ASTM C 1097 1,000 PSI/ DAYS.
- MINIMUM LAP SPLICES FOR REINFORCED CMU (WHEN FM = 1,500 PSI):
 

CMU SIZE	LAP SIZE
8" X 8"	12"
8" X 16"	18"
16" X 16"	24"
- NOT ALLOWED. MAXIMUM BAR DIAMETER SHALL NOT EXCEED ONE-EIGHTH OF NOMINAL WALL THICKNESS.
- REINFORCING BARS LARGER THAN #9 SHALL BE SPLICED USING MECHANICAL CONNECTORS.
- SCHEDULE IS ONLY FOR BARS CENTERED IN THE WALL. ALL EACH FACE REINFORCING BARS SHALL BE SPLICED.

**STEEL**

- ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE. STRUCTURAL STEEL SHALL CONFORM TO:
  - ASTM SPECIFICATION A 992 GRADE 50 FOR ALL WIDE FLANGE BEAMS.
  - ASTM SPECIFICATION A 36 FOR MISCELLANEOUS STEEL SHAPES (ANGLES, PLATES, ETC.).
  - SQUARE OR RECTANGULAR HSS SHALL CONFORM TO ASTM SPECIFICATION A 1085 GRADE A (FY=50 KSI).
  - ALL STEEL TO HAVE A SHOP COAT OF RUST INHIBITIVE PAINT.
  - DELETE PAINT ON ALL STEEL TO RECEIVE SPRAYED ON FIREPROOFING OR CONCRETE ENCASEMENT.
  - ALL MILL CAMBER TO BE ORIENTED UPWARD DURING FABRICATION AND ERECTION.
  - STEEL BEAMS INSTALLED IN PARALLEL WITH STEEL BAR JOISTS MUST HAVE CAMBER EQUAL TO BAR JOISTS.
- ALL SHOP AND FIELD WELDING SHALL BE PERFORMED BY WELDERS QUALIFIED, AS DESCRIBED IN "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" (AWS D1.1), TO PERFORM THE TYPE OF WORK REQUIRED.
- ALL CONNECTIONS SHALL BE BOLTED WITH 3/4" DIAMETER, A-325 HIGH STRENGTH BOLTS OR WELDED (UNLESS SHOWN OTHERWISE ON THE DRAWINGS).
  - ALL CONNECTIONS TO HOLLOW STRUCTURAL SECTION (HSS) COLUMNS ARE TO BE THRU-PLATE UNLESS NOTED OTHERWISE.
  - ALL CONNECTIONS SHALL BE DOUBLE ANGLES UNLESS NOTED OTHERWISE.
- ALL ALUMINUM AND STEEL MEMBERS TO BE TREATED OR PROPERLY SEPARATED TO PREVENT GALVANIC AND CORROSIVE EFFECTS.
- ALL STEEL WELDING RODS SHALL BE E70XX ELECTRODES.
- SUBMIT ALL STEEL SHOP DRAWINGS FOR APPROVAL PRIOR TO ANY FABRICATION.
- EQUIPMENT SUPPORTS:
  - PROVIDE ALL SUPPORTING STEEL NOT INDICATED ON DRAWINGS REQUIRED FOR THE INSTALLATION OF MECHANICAL EQUIPMENT AND MATERIALS, INCLUDING ANGLES, CHANNELS, BEAMS, HANGERS, ETC. DO NOT SUPPORT EQUIPMENT OR PIPING FROM METAL DECKING.
- DECK SUPPORTS:
  - PROVIDE 1/4" BENT PLATES AT ALL HIPS, VALLEYS, SKEWED BEAMS AND OTHER AREAS FOR DECK SUPPORT.

**JOISTS**

- ALL JOISTS SHALL HAVE A SHOP COAT OF RUST INHIBITIVE NON BITUMINOUS PAINT.
- JOIST MANUFACTURER SHALL HAVE A SPECIALTY ENGINEER REGISTERED IN THE STATE OF FLORIDA SIGN AND SEAL ALL STEEL JOIST SHOP DRAWINGS. THESE SHOP DRAWINGS SHALL CONTAIN A STATEMENT CERTIFYING THAT THE STEEL JOISTS CAN SAFELY RESIST THE WIND UPLIFT FORCES AS NOTED.
- STEEL JOISTS SHALL BE DESIGNED, FABRICATED AND ERECTED TO THE REQUIREMENTS OF THE SPECIFICATIONS OF THE STEEL JOIST INSTITUTE FOR:
  - SERIES K JOISTS  
MANUFACTURER SHALL BE A MEMBER OF THE STEEL JOIST INSTITUTE. PROVIDE BRIDGING IN ACCORDANCE WITH SJI STANDARDS UNLESS NOTED OTHERWISE ON THE DRAWINGS.  
JOIST SHALL HAVE THE FOLLOWING CAMBERS UNDER THEIR OWN WEIGHTS:  
30' SPAN OR LESS - CAMBER = 0  
30' SPAN TO 60' SPAN - CAMBER = 1" MAXIMUM  
60' SPAN TO 100' SPAN - CAMBER = 1-1/2" MAXIMUM
- JOIST MANUFACTURER MUST DESIGN BRIDGING ASSUMING NO BRACING IS GIVEN BY THE ROOF DECK.

**DECK**

- STEEL ROOF DECK SHALL BE:
  - 1-1/2", 22 GA. TYPE B METAL DECK GALVANIZED AS SHOWN ON ROOF PLAN AS MANUFACTURED BY VULCRAFT/NUCOR OR APPROVED EQUAL. MANUFACTURER SHALL BE A MEMBER OF THE STEEL DECK INSTITUTE. ROOF DECK MUST COMPLY WITH STEEL DECK INSTITUTE STANDARDS. ALL ROOF DECK SHALL BE CONTINUOUS OVER A MINIMUM OF THREE SPANS. ROOF DECK WITH LIGHTWEIGHT INSULATING CONCRETE SHALL BE VENTED.
- ALL ROOF DECK TO BE DESIGNED, MANUFACTURED, AND INSTALLED IN ACCORDANCE WITH LATEST FACTORY MUTUAL STANDARDS.
- WELDING WASHERS ARE TO BE USED ON ALL CONNECTIONS OF STEEL WITH METAL THICKNESS LESS THAN 22 GA. TO STRUCTURAL STEEL SUPPORTS.
- IN AREAS OF WARPED ROOF DECK, SELF DRILLING SCREWS ARE TO BE USED ON CONNECTIONS OF STEEL ROOF DECK TO STRUCTURAL STEEL SUPPORTS. SCREW SIZES TO COMPLY WITH MANUFACTURER'S AND FACTORY MUTUAL REQUIREMENTS. ATTACH DECK TO ALL SUPPORTING ROOF JOISTS.
- 1-1/2" METAL ROOF DECK IS TO BE ATTACHED TO STRUCTURAL STEEL SUPPORTS WITH 5/8" DIAMETER PUNCH BOLT. MINIMUM OF 5 WELDS PER SHEET PER JOIST). SIDE JOISTS SHALL BE FASTENED TOGETHER WITH #10 SELF DRILLING SCREWS. MID SPAN BRACING SUPPORTS (MINIMUM OF 3 PER SHEET), UNLESS INDICATED OTHERWISE ON THE DRAWINGS. ROOF DECK WITH LIGHTWEIGHT INSULATING CONCRETE SHALL BE VENTED.
- STEEL ROOF AND FLOOR DECK 22 GA OR THINNER SHALL BE GALVANIZED (G90) PER ASTM A653.

**SHOP DRAWINGS**

THE SHOP DRAWINGS SHALL BE SUBMITTED IN COMPLETE PACKAGES FOR THE FOLLOWING:

- CONCRETE MIX DESIGNS
- CONCRETE REINFORCING STEEL AND WELDED WIRE FABRIC
- CONCRETE MASONRY UNIT SUBMITTALS AND OTHER MASONRY ACCESSORIES
- SUBGRADE COMPACTION TEST RESULTS(AS THEY RELATE TO THE STRUCTURAL FOUNDATION AND SLAB)
- STRUCTURAL STEEL
- STEEL JOISTS
- METAL DECK
- METAL TRUSSES

- PRE-ENGINEERED ITEMS SHALL BE SUBMITTED SIGNED AND SEALED BY A SPECIALTY ENGINEER REGISTERED IN THE STATE OF FLORIDA.
- CONTRACTOR SHALL REVIEW AND APPROVE ALL SHOP DRAWINGS PRIOR TO SUBMITTING THEM TO ARCHITECT/ENGINEER.

Order Plans