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GENERAL NOTES

I. CODES AND SPECIFICATIONS

A. GENERAL BUILDING CODE
International Building Code 2015

B. CONCRETE CODES
1. ACI 318, American Concrete Institute Building Code.
2. ACI 301, Specifications for Structural Concrete for Buildings.
3. CRSI - Manual of Standard Practice.

C. STRUCTURAL STEEL CODES
1. AISC - Steel Construction Manual
2. ANSI/AWS D1.1, American Welding Society - Steel.

D. CONFLICTS IN STRUCTURAL REQUIREMENTS
Where conflict exists among the various parts of the Structural and architectural Contract Documents, (Structural Drawings, General Notes, Specifications) the strictest requirements shall govern.

All Codes and Specifications listed above shall include all amendments and addenda in force at the date of the contract documents.

II. TYPICAL DETAILS

Details labeled "Typical Details" on the Drawings shall apply to all situations occurring on the Project that are the same or similar to those specifically detailed. Such details shall apply whether or not they are keyed in at each location. Questions regarding applicability of Typical Details shall be determined by the Engineer

III. DESIGN CRITERIA

A. DEAD LOADS

1. Dead loads. Dead load materials assumed in the design are shown on the Architectural and Structural Drawings.

2. Partitions: An allowance of 20 psf has been made for partitions as a uniformly distributed live load, wherever partitions are used and location subject to change excluding public lobbies, corridors, restrooms, and places of public assembly.

B. LIVE LOADS

OCCUPANCY	UNIFORM LOAD (PSF)	CONCENTRATED LOAD (#)
Roof	20	N/A
Work	150	2000
Guard Rails & Hand Rails	50 plf or 200 lbs. applied at top Rail in any direction, Intermediate Rails = 25 plf.	
Mechanical rooms, typical	150	actual equipment Wt.
Storage - Light	125	0

C. WIND LOADS

Ultimate wind speed per ASCE 7-10 (3-second gust) = 139 mph
Building design Category - II
Exposure factor = C
Internal pressure coefficient, GCpi = +/- 0.18

IV. FOUNDATION - GENERAL

A. GEOTECHNICAL REPORT
Foundation design is based on the following geotechnical report:
Proposed " Retail Center - Gosling Road- Near Gosling Road and Downshire Drive in Spring, Texas
Prepared by: ECS Southwest, LLP
Report No. 43-1552
Dated: September 12, 2018
All recommendations therein that relate to the work shown on these drawings shall be followed.

B. FOUNDATION APPROVAL AND INSPECTION BY AUTHORIZED INSPECTOR

1. The General Contractor shall notify the Geotechnical Engineer or other authorized Inspector for review of foundation bearing surface, inspection of foundation installation, and placement of reinforcing steel. The contractor shall not place concrete without Inspector's approval.

2. The Contractor shall notify the authorized Inspector 48 hours in advance of any major foundation pour.

C. GRADE BEAMS/ TILT WALLS

1. Grade Beam Size Forms.
a. Form exposed faces of grade beams.

2. Grade beam bottom steel shall be chaired at 5 foot maximum centers using beam bolsters providing 3 inch bottom cover to reinforcing steel. Beam bolsters used shall be intended for support on soil.

3. Bottom bars of grade beam shall be spliced (where required) at the piers only. Top bars shall be spliced (where required) at the midspan of the grade beams. Lap length shall be 44 times bar diameter unless specified otherwise. Provide corner bars to match top and bottom steel.

4. Minimum 6" thick void boxes under the grade beam and tilt up walls shall be placed to avoid potential unstability of soil underneath. The void boxes shall have a capacity to carry the wet weight grade beam concrete.

D. SLAB-ON-GRADE CONSTRUCTION

1. Slab on grade construction shall follow the recommendations of Guide for Concrete Floor and Slab Construction ACI 302.1R.

2. Subgrade Preparation shall conform to the soils report noted above to reduce PVR to 1 inch to prepare the grade below slab on grade.

a. Removal and replacement or rework of existing undocumented fill shall be per the Geo-Tech report recommendations

VAPOR RETARDER
1. Vapor retarder shall have no more than 0.01 perms as tested before and after mandatory conditioning (ASTM E 1745 Section 7.1 and sub-paragraphs 7.1.7-9). Meet or exceed the requirements of ASTM E 1745 Class A and be no less than 15 mils thick.

STEGO WRAP VAPOR BARRIER (15 mils)
Vapergard by REEF Industries
Ecoshield-E 15 mil by Epro Services

2. All seams shall be overlapped a minimum of 6 inches and taped with manufacturer's tape. All penetrations, block-outs, and openings shall be sealed using a combination of the vapor retarder, mastic and manufacturer's tape.

V. DRILLED PIER FOUNDATION

A. DESIGN SOIL PRESSURES

1. Allowable Pressures = 4000 psf under sustained loads
= 6000 psf for total (dead + live) loads
2. Uplift on Pier (active zone of lift) = 1400 psf.

3. Drilling contractor should have casing available in the event that sloughing causes improperly formed shaft.

B. FIELD INSPECTION OF BEARING STRATUM

1. The bearing stratum of each drilled pier shall be inspected and approved by the Geotechnical Engineer or other authorized inspector prior to pouring of concrete.

2. The bottom elevation of piers is shown on the Drawings for bid purposes. The actual required bearing elevation may vary as required to provide proper capacity as determined by the geotechnical engineer. Footings shall be poured immediately after excavation.

3. Provide and install 1/8 inch steel templates to accurately set vertical pier reinforcing steel, and anchor bolts for steel columns.

C. SITE CONDITIONS

1. The presence of sand seams and slickensides in the layers may cause sloughing during pier excavation. This may require the use of temporary steel casing.

2. Reducing the potential for caving of the bell can be achieved by limiting the bell to shaft diameter ratio to 2:1 or to install straight shaft footings.

3. The groundwater levels may fluctuate seasonally and with climatic changes. Seepage of groundwater into the excavations is possible and seepage from "perched" water trapped in the soils may also occur. The Contractor shall make provisions for dewatering the footing excavation if groundwater is encountered.

4. Concrete shall be places as soon as possible after the footing excavations are completed to reduce the potential for water seepage and to minimize the disturbance to the bearing area. In no case, should an excavation be left open overnight.

VI. CONCRETE

A. CLASSES OF CONCRETE

1. All concrete shall conform to the 28-day compressive strength requirements as specified in the table below unless noted otherwise on the Drawings:

USAGE	STRENGTH (PSI)	TYPE	MAX. AGGR SIZE (IN.)
Drilled piers	3000	NW	1 1/2
Slab-on-Grade	3000	NW	1 1/2
Grade beams	3000	NW	1 1/2
Tilt Up Walls	4000	NW	1
site Structures (if in our scope)	3000	NW	1 1/2

Note: NW = Normal weight concrete
LW = Lightweight concrete slab (Density = 1.5 pcf max.)
AGGR = Aggregate

2. There shall be no horizontal cold joint in any concrete pour.

3. Admixtures used shall be compatible with floor treatments.

4. Concrete for slabs shall have a maximum water-cement ratio of 0.45.

5. Concrete shall comply with the requirements of ACI 301 and ACI 318.

6. Fly ash conforming to ASTM C618, Type F, may be used unless noted otherwise. The maximum amount of fly ash shall be 25% of the total cementitious material by weight.

VII. REINFORCING STEEL

A. SPECIFICATION

1. ASTM A 615 Grade 60 unless noted otherwise on the drawings. Welded Reinforcing Steel - ASTM A 706.

2. Welded Wire Fabric: Welded smooth wire fabric. ASTM A 185, yield strength 65,000 psi. Welded deformed wire fabric for ASTM A 497, yield strength 70,000 psi. All welded wire fabric shall be furnished in flat sheets only. Wherever welded wire fabric is specified as reinforcement, it shall be continuous across the entire concrete surface and not interrupted by beams or girders and properly lapped over cross wire loading plus 2 inches.

B. REINFORCING STEEL COVERAGE
Cover in structural members not specified below shall conform to the requirements of ACI 318 Section 7.7 unless specified otherwise on the drawings.

1. Foundation Members

Grade Beams	1 1/2" top, 3" bottom, 3" sides
Sump Walls, Pit Walls	2" both faces
Drilled Piers	3" sides
Interior Slab-on-Grade	see details

2. Mild Reinforced Members, Interior Exposure (air conditioned space)

Structural Slabs	1" top, 1" bottom

VIII. STRUCTURAL STEEL

A. MATERIAL

Wide flanges sections	ASTM A992 GR 50
Tubes	ASTM A500 GR B
Pipes	ASTM A53 GR B or ASTM A501
Connection material	ASTM A36 unless stronger required
Anchor rods	ASTM F1554-36 u.n.o.

All hot rolled steel plates, shapes and bars shall be new steel conforming to ASTM Specification A6-84c.

B. CONNECTIONS

1. Typical connection details are indicated on the Drawings.

2. The design of all steel connections shall be performed under the direct supervision of a registered professional engineer in the state where the project is located, employed by the fabricator. Calculations sealed by the fabricator's professional engineer must be submitted if requested.

3. It is the intention of the plans and specifications that shop connections be welded or bolted and that field connections be bolted, unless detailed otherwise on the Drawings.

4. All typical beam simple connections shall be standard double angle or single angle frames beam connections. Shear tab connections may be used at locations where double angle connections are not possible. Seated beam connections shall not be used unless indicated on the Drawings. Provide full depth shear tab if beam frames on only one side of a girder.

5. Beam Reactions

Non-Composite beams: Design connections to support a reaction R (unless specified otherwise) equal to one half the total uniform load capacity from the table of Uniform Load Constants in the AISC Manual.

6. Bracing connections shall develop full tensile forces at each end of the bracing member unless bracing forces are specified on the Drawings.

7. NC = Moment Connections

8. Welds:

A) All welds shall conform to the American Welding Society (AWS) standards.

B) All welding shall be performed by a welder certified in accordance to the AWS standards.

9. Bolts:

A) All bolts shall conform to ASTM A325 Type 1, High Strength Bolts. All bolts shall be designed as bearing bolts with threads included in the shear plane. Minimum bolt diameter shall be 3/4 inch. All bolts shall be tightened to a snug-tight position, unless noted below.

B) All bolts at braces and moment connections shall be tightened using load indicating washers or tension bolts.

C) All bolts shall be new and shall not be re-used.

C. GALVANIZING

1. All steel exposed to weather or outside the building's waterproofing, such as brick shelf angles, shall be hot-dipped galvanized after fabrication.

2. All steel surfaces to be hot dip galvanized shall be prepared as specified by the Steel Structures Painting Council (SSPC).

3. The zinc coating for steel shapes and plates shall average not less than 2.3 oz. with no individual thickness less than 2.0 oz.

4. Galvanize all nuts, bolts, and washers used in the connection of galvanized steel.

5. Protect all field welded connections with "ZRC, Cold Galvanizing Compound" as manufactured by ZRC Product Company.

D. MISCELLANEOUS - STAIRS AND HANDRAILS

1. Handrails and guardrails (including attachment to structure) shall be designed by the fabricator for the loads indicated in the referenced Building Code. Shop drawings shall be sealed by a Professional Engineer in the state of Texas, representing the fabricator.

2. Stairs shall be designed by the fabricator for code required loads. Shop drawings shall be sealed by a Professional Engineer in the state of Texas, representing the fabricator.

IX. NON-SHRINK GROUT FOR BASE PLATES AND BEARING PLATES

A. SPECIFICATIONS

1. Grout for base plates and bearing plates shall be a non-metallic, shrinkage resistant, premixed, non-corrosive, non-staining product containing Portland cement, silica sands, shrinkage compensating agents, and fluidity improving compounds.

2. Grout shall conform to Corps of Engineers Specification for Non-Shrink Grout, CE-CRD-C621, Twenty-eight day compressive strength as determined by grout cube tests, shall be 5,000 PSI. Minimum thickness of grout under all base plates and bearing plates shall be 1 inch, unless specified otherwise on the drawings.

3. Grout shall be placed in a fluid flowable state under base plates that have a form built around them for grout confinement. Grout should be cured according to manufacturer's recommendations.

X. OPEN WEB STEEL JOISTS

A. SPECIFICATIONS

1. Open web steel joists and joist girders shall be designed, manufactured and erected per the Steel Joist Institute (SJI) Specifications.

2. Joists and Joist Girders shall be cambered for realistic dead load. Provide Standard SJI camber unless specified otherwise on the Drawings.

3. Provide top chord extensions where shown on the Drawings.

4. Provide flat bearing for all joists and joist girders. Provide minimum end bearing of 2 1/2 inches for K-series joists and as indicated below for LH and DLH joists. If sufficient bearing does not exist, stagger the end of each joist and center bearing over center of support. Where K-series joists bear on the same beam as LH and DLH joists, the K-series joist seats shall match the depth of the LH or DLH joist seats. Joists shall extend a distance of not less than 4" over masonry or concrete supports for K-series joists and not less than 6" for LH and DLH joists.

LH and DLH Joist Section Number	Minimum Bearing Length
XXLH02-06 or XXDLH02-06	2 1/2"
XXLH07-17 or XXDLH07-17	4"
XXLH18-25 or XXDLH18-25	6"

5. Provide horizontal and diagonal bridging as required by SJI Specifications.

6. Provide SJI standard depth of bearing for all joists and joist girders.

7. Coordination of all joist seat depths with structural steel elevations shall be the responsibility of the contractor and steel fabricator.

8. Top chord of joists shall be double angles or tees.

9. Provide minimum end anchorage to steel and masonry as required by SJI Specifications.

10. Joists and Joist Girders shall be shop painted per Architectural specifications.

11. Joists and Joist Girders with bottom chord extensions shall not have end connections made until after full dead load is applied.

12. Provide additional steel, bridging, etc. as required to comply with all OSHA requirements.

B. DESIGN

1. The design of all open web joists shall conform to the codes and specifications cited above.

2. All joists shall carry the design loads as specified in the SJI load tables as the minimum requirement. Additionally, the joists shall be designed to carry any other load types and patterns as indicated on the structural drawings. Examine the structural drawings for any other loads required to be carried by any joist.
3. Increase size as required to conform with Factory Mutual and U.L. requirements.

C. SUBMITTAL

1. Joist manufacturer shall submit the following for Engineer's review and approval:

A) Produce certification letter that joists and joist girders comply with all documents noted in these general notes.

B) Shop drawings showing joists layout, bridging and other accessories.

C) Design calculations for all joists showing load carrying capacity. Calculations shall be signed and sealed by a registered Engineer. Calculations are for Owner's record only.

XI. STEEL ROOF DECK (WITH RIGID INSULATION BOARD)

A. SCHEDULE
Roof deck shall be 1.5B (22 gauge) as manufactured by Vulcraft, or equivalent.

B. SPECIFICATION

1. The design, fabrication, and erection of all roof deck shall conform to the Steel Deck Institute Design Manual for Composite Decks, Form Decks, and Roof Decks as published by the Steel Deck Institute (SDI).

2. Steel deck shall be manufactured from steel conforming to ASTM A 653-94 structural quality grade 33 or higher.

3. Steel deck shall be galvanized with a protective zinc coating conforming to ASTM A 653-94 G90 class.

C. ATTACHMENT

1. Roof deck units shall be welded to each structural support member using 5/8 inch diameter puddle welds at all ribs where sides lap and each rib in between (36/7 pattern). Weld metal shall penetrate all layers of deck material at end laps and side joints and shall have good fusion to the supporting members. At perimeter, deck shall be welded at 6" o.c. Side lap fasteners shall be #10 TEK screws (min 6 fasteners.)

D. DECK SPANS

Metal deck spans shall not exceed the maximum center to center spans as required by SDI criteria. Where possible, all metal deck shall extend over three or more supports. Two span deck shall be used only where deck layout does not permit the use of three spans. Single span deck is not permitted.

E. ACCESSORIES

Provide minimum 20 gauge ridge and valley plates, minimum 20 gauge cant strips, minimum 14 gauge sump pans, minimum 20 gauge inside or outside closure channels, minimum 20 gauge butt strips at change of deck directions, minimum 20 gauge filler sheets, and rubber closures as required to provide a finished surface for the application of insulation and roofing.

F. ROOF OPENINGS

Roof openings less than 6 inch square or diameter require no reinforcement. Openings 6 inch to 10 inch inclusive shall be reinforced with a 20 gauge galvanized plate welded to the deck at each corner and 6 inch maximum centers with a 5/8 inch diameter puddle weld or sheet metal screws. Unless indicated otherwise on the drawings, openings over 10 inch wide or diameter shall be reinforced with an angle 2 1/2 x 2 1/2 x 1/4 framing each side of the opening and spanning between supports for spans 4 feet or less and L 3 x 3 x 1/4 for spans greater than 4 feet but less than 6 feet unless specified otherwise on drawings. Larger openings shall be referred to the Engineer for framing.

XII. SUBMITTALS

A. SHOP DRAWINGS

1. The General Contractor shall submit for Engineer review shop drawings for the following items:

Structural Steel (*)
Reinforcing Steel
Metal Deck
Concrete Mix Designs
Steel Stair (*)
Bar Joists (*)
Miscellaneous Steel
Tilt Wall

Items marked (*) shall have shop drawings sealed by a registered engineer in the state where the project is located. Items marked (#) shall be submitted to Engineer for Owner's record only and will not have Engineer's shop drawing stamp.

2. All shop drawings must be reviewed and sealed by the General Contractor prior to submittal.

3. Contractor shall submit electronic copies (e.g. pdfs) of all shop drawings specified to be returned by the Engineer.

4. The omission from the shop drawings of any material required by the Contract Documents to be furnished shall not relieve the contractor of the responsibility of furnishing and installing such materials, regardless of whether the shop drawings have been reviewed and approved.

B. MANUFACTURER'S LITERATURE

Submit two copies of manufacturer's literature for all materials and products used in construction on the project.

C. REPRODUCTION

The use of reproductions of these Contract Documents by any contractor, subcontractor, erector, fabricator, or material supplier in lieu of preparation of shop drawings signifies his acceptance of all information shown herein as correct, and obligates himself to any Job expense, real or implied, arising due to any errors that may occur herein.

XIII. MISCELLANEOUS

A. CONTRACT DOCUMENTS
It is the responsibility of the General Contractor to obtain all Contract Documents and latest addenda and to submit such documents to all subcontractors and material suppliers prior to the submittal of shop drawings, fabrication of any structural members, and erection in the field.

B. DRAWING CONFLICTS
The General Contractor shall compare the Architectural and Structural drawings and report any discrepancy between each set of drawings and within each set of drawings to the Architect and Engineer prior to the fabrication and installation of any structural members.

C. EXISTING CONDITIONS
The General Contractor shall verify all dimensions and existing conditions at the job site and report any discrepancies from assumed conditions shown on the drawings to the Architect and Engineer prior to the fabrication and erection of any members.

D. RESPONSIBILITY OF THE CONTRACTOR FOR STABILITY OF THE STRUCTURE DURING CONSTRUCTION
All structural elements of the project have been designed by the Structural Engineer to resist the required code vertical and lateral forces that could occur in the final completed structure only. It is the responsibility of the Contractor to provide all required bracing during construction to maintain the stability and safety of all structural elements during the construction process until the structure is tied together and completed.

E. HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE POURS
There shall be no horizontal construction joints in any concrete pours unless shown on the drawings. All deviations or additional joints shall be approved in writing by the Architect/Engineer.

XIV. SITE OBSERVATION BY THE STRUCTURAL ENGINEER

A. The contract structural drawings and specifications represent the finished structure, and except where specifically shown, do not indicate the method or means of construction. The Contractor shall supervise and direct the work and shall be solely responsible for all construction means, methods, and procedures, techniques, and sequence.

B. The Engineer shall not have control or charge of, and shall not be responsible for, construction means, methods, techniques, sequences, or procedures, for safety precautions and programs in connection with the work, for the acts or omission of the Contractor, Subcontractor, or any other persons performing any of the work, or for the failure of any of them to carry out the work in accordance with the contract documents.

C. Periodic site observation by field representatives are solely for the purpose of determining if the work of the Contractor is proceeding in accordance with the structural contract documents. This limited site observation should not be construed as exhaustive or continuous to check the quality or quantity of the work, but rather periodic in an effort to guard the Owner against defects or deficiencies in the work of the Contractor.

XV. TILT UP WALL PANELS

A. Concrete Strength: Refer to General Notes.

B. Panels are viewed from the interior.

C. Panels are 6 inches thick unless noted otherwise.

D. Panels shall be reinforced with # 5 @ 12 inch o.c. vertical and # 4 @ 12 inch o.c. horizontal at mid-depth. Two #5 continuous face at all edges with corner bars. Provide 1 # 5 x 4 feet diagonal at all corners of each opening, 2 feet long each side of corner. See elevations and sections for additional reinforcement in panels.

E. See Details for dowels, connections to steel frames, etc.

F. Contractor shall submit for Owner's record the method of lifting panels prior to pouring panels, and shall furnish and install lifting inserts and any additional reinforcement required by the lifting method.

G. See Architectural, Mechanical, Electrical, and Structural Drawings and Details for all bolts, plates, dowels, reglets, chamfers, reveals, finishes, conduit, boxes, etc., to be cast into panels. Contractor shall submit shop drawings coordinating the placement of all such materials, including reinforcing steel to be cast into panels.

H. All steel exposed to exterior shall be galvanized and all welds shall be coated with zinc rich paint.

I. Coordinate top of panel dimensions with Architectural details.

J. Verify door and window openings in all Architectural Drawings.

K. Coordinate location of embed plates shown with steel fabricator.

L. All reinforcement shown on panel elevations are in addition to main reinforcements noted in Item 4 above. All additional reinforcement at openings shall be spaced at 3 inches o.c.

M. See Architectural Drawings for exterior finish of the panels.

1 GENERAL NOTES
SCALE: 1/16" = 1'-0"

G&A
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ARCHITECTS / PLANNERS
TBPE Firm Registration No. F-18127

STATE OF TEXAS
JONATHAN O. CHERRAD
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LICENSED
PROFESSIONAL ENGINEER
Pending 05.12.2019

Project Information:

Consultants:

HSE Hughes Scherrer Associates Engineers

SHOPS ON GOSLING
RETAIL CENTER
SHELL BUILDING DEVELOPMENT
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