

STRUCTURAL NOTES

A. GENERAL

1. THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2012 EDITION, WITH CITY OF HOUSTON AMENDMENTS.

2. THE DESIGN GRAVITY LOADS ARE AS FOLLOWS:

ROOF	20 PSF LL
------	-----------

3. THE STRUCTURES HAVE BEEN DESIGNED TO WITHSTAND THE WIND PRESSURES SPECIFIED IN CHAPTER 16, SECTION 1609, OF THE INTERNATIONAL BUILDING CODE, ACCORDING TO THE FOLLOWING INFORMATION:

WIND SPEED (V _{ult})	139 MPH
WIND DIRECTIONALITY FACTOR	0.85
IMPORTANCE FACTOR	1.0
RISK CATEGORY	II
EXPOSURE CATEGORY	B
TOPOGRAPHIC FACTOR	1.0
GUST EFFECT FACTOR	0.85
ENCLOSURE CLASSIFICATION	ENCLOSED
INTERNAL PRESSURE COEFFICIENT	+/- 0.18
COMPONENT & CLADDING PRESSURES	SEE TABLE THIS SHEET

4. HANDRAILS AND GUARDS SHALL BE DESIGNED IN ACCORDANCE WITH TABLE 1607.1 OF THE INTERNATIONAL BUILDING CODE AS FOLLOWS:

- A. HANDRAIL ASSEMBLIES AND GUARDS SHALL BE DESIGNED TO SUPPORT A LATERAL LOAD OF 50 POUNDS PER LINEAR FOOT (PLF) APPLIED IN ANY DIRECTION AT THE TOP AND TO TRANSFER THIS LOAD THROUGH THE SUPPORTS TO THE STRUCTURE.
- B. INTERMEDIATE RAILS, BALUSTERS, AND PANEL FILLERS SHALL BE DESIGNED TO SUPPORT A HORIZONTALLY APPLIED NORMAL LOAD OF 50 ON AN AREA NOT TO EXCEED ONE SQUARE FOOT INCLUDING OPENINGS AND SPACE BETWEEN RAILS. REACTIONS DUE TO THIS LOADING ARE NOT REQUIRED TO BE SUPERIMPOSED WITH THOSE IN NOTE (A) OR (C).
- C. HANDRAIL ASSEMBLIES AND GUARDS SHALL BE DESIGNED TO SUPPORT A LOAD OF 200 POUNDS APPLIED IN ANY DIRECTION AT ANY POINT ON THE RAIL. THESE LOADS NEED NOT BE ASSUMED TO ACT CUMULATIVELY WITH THOSE IN NOTE (B) ABOVE.

5. STAIR TREADS AND STRINGERS SHALL BE DESIGNED FOR A UNIFORM LOAD OF 100 PSF. INDIVIDUAL STAIR TREADS SHALL ALSO BE DESIGNED TO SUPPORT A 300 LB. LOAD ON A 4 SQUARE INCH AREA IN A POSITION THAT WILL CAUSE MAXIMUM STRESS.

6. EXCEPT FOR AREAS OF PUBLIC ASSEMBLY, AND EXCEPT FOR LIVE LOADS WHICH EXCEED 100 PSF, FLOOR LIVE LOADS ARE REDUCED FOR SLAB SYSTEMS, BEAMS, GIRDERS, COLUMNS, PIERS, WALLS, AND FOUNDATIONS WHICH SUPPORT A FLOOR AREA OF 150 SQ. FT. OR GREATER. THE FLOOR LIVE LOAD IS REDUCED AT THE RATE OF 0.08 PERCENT PER SQ. FT. OF FLOOR AREA SUPPORTED IN EXCESS OF 150 SQ. FT. THE REDUCTION DOES NOT EXCEED 40 PERCENT FOR MEMBERS RECEIVING LOADS FROM ONE LEVEL ONLY, 60 PERCENT FOR OTHER MEMBERS, NOR "R" AS DETERMINED BY R= 23.1(1+DEAD LOAD/LIVE LOAD), IN ACCORDANCE WITH SECTION 1607 OF THE BUILDING CODE.

7. METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.

8. THE STRUCTURE HAS BEEN DESIGNED FOR THE IN-SERVICE LOADS ONLY. THE METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUPPORTING FORMWORK FOR ELEVATED CONSTRUCTION SHALL NOT BE REMOVED BEFORE THE CONCRETE HAS GAINED SUFFICIENT STRENGTH TO SAFELY STRESS THE TENDONS IN BOTH DIRECTIONS AND THE STRUCTURE HAS GAINED SUFFICIENT STRENGTH TO SAFELY STRESS THE POST-TENSIONING TENDONS IN BOTH DIRECTIONS AND THE STRUCTURE HAS TO SAFELY SUPPORT THE DEAD AND SUPERIMPOSED LOADS WHICH WOULD BE SUBSEQUENTLY APPLIED.

9. SCALES NOTED ON THE DRAWINGS ARE FOR GENERAL REFERENCE ONLY. NO DIMENSIONAL INFORMATION SHALL BE OBTAINED BY DIRECT SCALING OF THE DRAWINGS.

10. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFIED BUILDING CODE AND ANY LOCAL REQUIREMENTS OF THE BUILDING DEPARTMENT OR JURISDICTION, AND OSHA STANDARDS.

11. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS OF ALL OTHER CONSULTANTS AND COORDINATED WITH THE WORK OF ALL TRADES.

12. CONSTRUCTION MEANS, METHODS, PROCEDURES, BRACING, AND SAFETY ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR OR SUBCONTRACTOR. THE STRUCTURAL DRAWINGS REPRESENT THE COMPLETE STRUCTURAL SYSTEM IN ITS FINISHED STATE.

13. ANY DISCREPANCIES IN THE DRAWINGS OR DUE TO FIELD CONDITIONS WHICH AFFECT THE STRUCTURAL DESIGN OR THOSE OF OTHER CONSULTANTS MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION OF THAT PORTION OF THE PROJECT.

14. ANY CHANGE OR DEVIATION DURING CONSTRUCTION OF THE STRUCTURAL DRAWINGS, EVEN AT THE OWNER'S REQUEST, SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER.

COMPONENT & CLADDING WIND PRESSURES FOR VERTICAL ELEMENTS (e.g. WINDOWS, DOORS, WALLS, FINISHES)		
COMPONENT SIZE (SQ FT)	COMPONENT LOCATION	
	EDGE ZONE	INTERIOR ZONE
10 SF OR LESS	+ 17 PSF - 28 PSF	+ 17 PSF - 25 PSF
11 SF- 20 SF	+ 17 PSF - 26 PSF	+ 17 PSF - 22 PSF
21 SF- 50 SF	+ 15 PSF - 26 PSF	+ 15 PSF - 22 PSF
50 SF AND LARGER	+ 15 PSF - 24 PSF	+ 15 PSF - 21 PSF

COMPONENT & CLADDING WIND PRESSURES FOR HORIZONTAL ELEMENTS (e.g. ROOF COVERINGS, ETC)			
COMPONENT SIZE (SQ FT)	COMPONENT LOCATION		
	INTERIOR ZONE	EDGE ZONE	CORNER ZONE
10 SF OR LESS	+ 10 PSF - 18 PSF	+ 10 PSF - 30 PSF	+ 10 PSF - 45 PSF
11 SF- 20 SF	+ 10 PSF - 17 PSF	+ 10 PSF - 26 PSF	+ 10 PSF - 37 PSF
21 SF- 50 SF	+ 10 PSF - 16 PSF	+ 10 PSF - 23 PSF	+ 10 PSF - 27 PSF
50 SF AND LARGER	+ 10 PSF - 16 PSF	+ 10 PSF - 19 PSF	+ 10 PSF - 19 PSF

NOTE: EDGE ZONE DISTANCE IS 10'-0" FROM BUILDING/ROOF EDGES

CONCRETE

1. CONCRETE IN THE FOLLOWING AREAS SHALL BE OF COMPRESSIVE STRENGTH (F'C) AT 28 DAYS AND CLASS LISTED BELOW. REFER TO CONCRETE SPECIFICATION FOR DEFINITION OF THE VARIOUS CLASSES OF CONCRETE.

DRILLED PIERS	3000 PSI	W/C RATIO = 0.52
SLAB ON GRADE AND GRADE BEAMS	3000 PSI	W/C RATIO = 0.52

2. FLY ASH AND MAY BE USED AS A POZZOLAN TO REPLACE A PORTION OF THE PORTLAND CEMENT IN A CONCRETE MIX. FLY ASH SHALL BE TYPE C OR F AND CONFORM TO ASTM C618. THE RATIO OF THE AMOUNT OF FLY ASH TO THE TOTAL AMOUNT OF FLY ASH AND CEMENT IN THE MIX SHALL NOT EXCEED 20 PERCENT.

3. THE FIRE PROTECTION RATING FOR THIS PROJECT IS BASED UPON THE USE OF NORMAL WEIGHT AGGREGATE CONCRETE MADE WITH CARBONATE AGGREGATES. CARBONATE AGGREGATES CONSIST MAINLY OF CALCIUM OR MAGNESIUM CARBONATE, E.G., LIMESTONE OR DOLOMITE, AND CONTAIN 40 PERCENT OR LESS QUARTZ, CHERT AND FLINT.

4. MINIMUM CONCRETE COVER PROTECTION FOR REINFORCEMENT BARS SHALL BE AS FOLLOWS: (SEE ACI 318 SECTION 7.7 FOR CONDITIONS NOT NOTED)

CONCRETE EXPOSED TO WEATHER:

#5 BARS AND SMALLER	1 - 1/2 INCHES
ALL OTHER BARS	2 INCHES
CONCRETE CAST AGAINST EARTH	3 INCHES

GRADE BEAMS:

TOP	1 - 1/2 INCHES
BOARD FORMED SIDES	2 INCHES
EARTH FORMED SIDES	3 INCHES
BOTTOM	3 INCHES

SLABS ON GRADE:

SINGLE LAYER OR TOP LAYER	2 INCHES
BOTTOM LAYER CAST AGAINST SOIL	3 INCHES
BOTTOM LAYER NOT CAST AGAINST SOIL	2 INCHES

COLUMNS & PLINTHS 1 - 1/2 INCHES

PILASTERS & PLINTHS 2 INCHES

BEAMS 1 - 1/2 INCHES

WALLS BELOW GRADE (BACKFILLED SIDE) 2 INCHES

WALLS BELOW GRADE (NO BACKFILL) 3/4 INCHES

PROVIDE STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.

8. CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM 615, GRADE 60 FOR #4 BARS AND LARGER. ALL OTHER REINFORCEMENT MAY CONFORM TO GRADE 40.

9. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. FABRIC SHALL BE SUPPLIED IN FLAT SHEETS. FABRIC SHALL BE LAPPED TWO MESH AT SPLICES.

10. HIGH STRENGTH WIRE STRAND REINFORCEMENT FOR PRESTRESSED CONCRETE MEMBERS SHALL CONSIST OF WIRE CONFORMING TO ASTM A416, GRADE 270K.

11. REINFORCEMENT BARS SHALL NOT BE TACK WELDED, WELDED, HEATED, OR CUT UNLESS INDICATED ON THE CONTRACT DOCUMENTS OR REVIEWED BY THE STRUCTURAL ENGINEER.

12. WELDING OF REINFORCEMENT BARS, WHEN ACCEPTED BY THE STRUCTURAL ENGINEER, SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STANDARD D1.4. ELECTRODES FOR SHOP AND FIELD WELDING OF REINFORCEMENT BARS SHALL CONFORM TO ASTM A233, CLASS E90XX.

13. REINFORCEMENT DESIGNATED AS "CONTINUOUS" MAY BE SPLICED USING TYPE "B" SPLICES. REINFORCEMENT BAR SPLICE LENGTHS IN BEAMS WHICH ARE LOCATED AT THE CENTERLINE OF SUPPORTS FOR BOTTOM BARS AND AT MIDSPAN FOR TOP BARS MAY BE 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE. PROVIDE STANDARD ACI HOOKS FOR TOP AND BOTTOM BARS AT DISCONTINUOUS ENDS OF ALL GRADE BEAMS.

14. HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90-DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED 36 BAR DIAMETERS, AT CORNERS AND INTERSECTIONS.

15. HORIZONTAL JOINTS WILL NOT BE PERMITTED IN CONCRETE CONSTRUCTION EXCEPT AS SHOWN ON THE CONTRACT DOCUMENTS. VERTICAL JOINTS MAY OCCUR AT CENTER OF SPANS AT LOCATIONS REVIEWED BY MSP ENGINEERING.

16. CONSTRUCTION JOINTS BETWEEN PIERS AND PIER CAPS, FOOTINGS AND WALLS OR COLUMNS, OR WALLS, COLUMNS, BEAMS, AND THE FLOOR SYSTEM THEY SUPPORT SHALL BE PREPARED BY ROUGHENING THE CONTACT SURFACE TO A FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH LEAVING THE CONTACT SURFACE CLEAN AND FREE OF LAITANCE.

17. PROVIDE 1- NO. 4 REINFORCEMENT BAR X 4'-0" AT RE-ENTRANT CORNERS AND AROUND RECTANGULAR HOLES IN SLABS UNLESS NOTED OTHERWISE. PLACE BAR DIAGONAL TO CORNER WITH 1" CLEARANCE FROM THE TOP AND THE SIDE OF THE SLAB AT THE CORNER.

18. PROVIDE 2- NO. 4 REINFORCEMENT BARS X 4'-0" AT RE-ENTRANT CORNERS OF SLAB ON GRADE AT POUR STRIPS AND COLUMN BLOCKOUTS. PLACE BARS CENTERED IN THE SLAB AND DIAGONAL TO THE CORNER WITH 1" CLEARANCE FROM THE SLAB AT THE CORNER.

19. CONDUIT, PIPES, AND SLEEVES EMBEDDED IN CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, CHAPTER 6.3.

FOUNDATION AND CONVENTIONAL SLAB ON GRADE

1. FOUNDATION DESIGNS ARE BASED ON GEOTECHNICAL REPORT NO. 711303 BY TEXAS GETECHNICAL CONSULTANTS AND ALL APPLICABLE ADDENDA AND SUPPLEMENTS.

2. FOUNDATION DESIGNS ARE DESIGNED FOR A NET ALLOWABLE BEARING PRESSURE = 4500 PSF TOTAL LOAD.

3. EXCAVATIONS FOR SPREAD FOOTINGS, COMBINED FOOTINGS, CONTINUOUS FOOTINGS AND/OR MAT FOUNDATIONS SHALL BE CLEANED AND HAND TAMPED TO A UNIFORM SURFACE. FOOTING EXCAVATIONS SHALL HAVE CONCRETE PLACED WITHIN 24 HOURS OF THE EXCAVATION OF THE FOOTING.

4. GENERAL CONTRACTOR SHALL NOTIFY THE ARCHITECT AND BRD ENGINEERING GROUP A MINIMUM OF 24 HOURS PRIOR TO PLACEMENT OF CONCRETE.

5. DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF WALLS WHICH ARE SUPPORTED TOP AND BOTTOM. SUCH SHORING SHALL NOT BE REMOVED UNTIL THE SUPPORTING ELEMENTS ARE IN PLACE, THE CONCRETE HAS ATTAINED THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH.

6. SUBGRADE UNDER SLABS ON FILL SHALL HAVE A MAXIMUM PLASTICITY INDEX OF 22 AND SHALL BE PREPARED, PLACED, AND COMPACTED IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT

7. THE FLOOR SUBGRADE SHALL BE PROPERLY COMPACTED AND PROOFROLLED AND SHALL BE FREE OF STANDING WATER, MUD, AND FROZEN SOIL.

8. A 10 MIL (MIN.) VAPOR RETARDER SHALL BE PLACED BENEATH ALL SLAB ON GRADE LOCATIONS WHERE INDICATED IN THE STRUCTURAL DRAWINGS.

9. REFER TO CIVIL DRAWINGS FOR REQUIREMENTS AT ALL PAVING AREAS. SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH GEOTECHNICAL REPORT AND RECOMMENDATIONS.

10. THE STRUCTURAL AND GEOTECHNICAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY IF QUESTIONABLE SOIL IS ENCOUNTERED OR IF FOUNDATION CONDITIONS OUTSIDE THE INTENT OF THE STRUCTURAL DESIGN AND DETAIL OCCURS.

11. THE OWNER SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING FOR THE LIFE OF THE STRUCTURE. STANDING WATER ADJACENT TO THE BUILDING FOUNDATION IS NOT ACCEPTABLE AT ANY TIME. LANDSCAPING UPDATES AND IRRIGATION SYSTEMS MUST BE MONITORED ON A REGULAR BASIS OF INSURE THIS REQUIREMENT IS BEING MAINTAINED.

THRESHOLD SPECIAL INSPECTION ITEMS

WHEN INDICATED WITH A '✓' THE FOLLOWING SHALL BE INSPECTED IN ACCORDANCE WITH FBC-B SECTION 1704 BY THE CERTIFIED THRESHOLD (SPECIAL) INSPECTOR. ALL INSPECTION SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED.

FOR MATERIAL SAMPLING AND TESTING REQUIREMENTS, REFER TO MATERIAL SAMPLING AND TESTING SECTION BELOW. THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS TO THE STRUCTURAL ENGINEER, ARCHITECT, CONTRACTOR, OWNER AND BUILDING DEPARTMENT. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN IF LEFT UNCORRECTED TO THE STRUCTURAL ENGINEER, ARCHITECT AND BUILDING DEPARTMENT.

ITEM	REQUIRED	REMARKS
GRADING, EXCAVATIONS, FILL.	✓	BY GEOTECHNICAL ENGINEER
CONCRETE - BATCH PLANT INSPECTION		PERIODIC
CONCRETE - CONCRETE PLACEMENT	✓	PERIODIC
CONCRETE - REBAR	✓	PRIOR TO POURING OF CONC.
CONCRETE - ANCHOR BOLTS AND PLATES	✓	INSPECT FINAL PLACEMENT
CONCRETE - EXPANSION ANCHORS	✓	PERIODIC (10% OF ANCHORS)
CONCRETE - EPOXY ANCHORS	✓	PERIODIC (10% OF ANCHORS)
STRUCTURAL STEEL FRAMING - MEMBER SIZES, INSTALLATION, AND CONNECTIONS	✓	PERIODIC
COLD FORMED METAL FRAMING - MEMBERS, FASTENING PATTERNS, AND CONNECTIONS	✓	PERIODIC
MASONRY WALLS - PLACEMENT, REBAR, GROUTING	✓	PERIODIC

* SPECIAL INSPECTIONS OF STRUCTURAL LOAD BEARING MEMBERS AND ASSEMBLIES FABRICATED ON THE PREMISES OF A FABRICATOR'S SHOP ARE NOT REQUIRED WHERE THE FABRICATOR IS APPROVED IN ACCORDANCE WITH 1704.2.2 OF THE BUILDING CODE

MATERIAL SAMPLING AND TESTING

WHEN INDICATION WITH A '✓' IN THE FOLLOWING SHALL BE SAMPLED AND TESTED BY A CERTIFIED INSPECTOR FROM AN ESTABLISHED TESTING AGENCY IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, GENERAL NOTES OR PREVAILING BUILDING CODE, WHICH EVER IS MORE STRINGENT. ALL MATERIAL SAMPLING AND TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM REQUIREMENTS. FOR ADDITIONAL INFORMATION ON MATERIAL SAMPLING AND TESTING, REFER TO PROJECT SPECIFICATIONS AND GENERAL NOTES. THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING REPORTS DIRECTLY TO THE STRUCTURAL ENGINEER, ARCHITECT, CONTRACTOR, OWNER AND BUILDING DEPARTMENT (IF REQUIRED). ANY MATERIALS WHICH FAIL TO MEET THE PROJECT SPECIFICATIONS SHALL BE IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER.

ITEM	REQUIRED	REMARKS
CONCRETE - REINFORCING	✓	MILL CERTIFICATES
CONCRETE - CYLINDERS	✓	AS REQUIRED PER SPECIFICATIONS
EXPANSION ANCHOR INSTALLATION	✓	10% OF ANCHORS TO BE TESTED
EPOXY ANCHOR INSTALLATION	✓	10% OF ANCHORS TO BE TESTED

DEFERRED SUBMITTAL ITEMS:
THE FOLLOWING ITEMS WILL BE DEFERRED SUBMITTALS IN ACCORDANCE WITH IBC SECTION 106.3.4.2 AND LOCAL BLDG. DEPARTMENT REQUIREMENTS. ALL DEFERRED ITEMS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD AND THE BUILDING DEPARTMENT FOR REVIEW PRIOR TO INSTALLATION. REFER TO CITY AMENDMENTS FOR ANY ADDITIONAL REQUIREMENTS.
1. PRE-ENGINEERED METAL CANOPY

ISSUE/REVISION
ISSUE FOR PERMIT & PRICING

DATE
06/13/2018

NO.
WWW.BIGREDDOG.COM

TEXAS REG. NO. F-1101

832.431.4560

STATE OF TEXAS
SERIAL T. WYNN
94081
6-13-18

PROJECT:
17211 PAD SITE

17211 145 SOUTH - Houston, TX 77090

SHEET TITLE:
General Notes & Specifications

S001

SCALE: NO SCALE