

# STRUCTURAL NOTES

## GENERAL

- THIS PROJECT SHALL MEET ALL REQUIREMENTS OF THE CITY OF RICHARDSON, TEXAS AND THE INTERNATIONAL BUILDING CODE.
- THE GENERAL CONTRACTOR SHALL VERIFY THE SIZE AND LOCATION OF ALL ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL OPENINGS (COORDINATE WITH APPLICABLE TRADES). THE CONTRACTOR SHALL PROVIDE FOR ALL OPENINGS, WHETHER SHOWN ON THE STRUCTURAL DRAWINGS OR NOT. ANY DEVIATION FROM OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR APPROVAL PRIOR TO CONSTRUCTION.
- THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL DRAWINGS BEFORE CONSTRUCTION AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR INCONSISTENCIES BEFORE PROCEEDING WITH THE WORK.
- COMPLETE SHOP DRAWINGS AS REQUIRED FOR THE STRUCTURAL WORK SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF CONSTRUCTION IN ACCORDANCE WITH THE SPECIFICATIONS. SUCH REVIEW BY THE ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR CORRECT FABRICATION AND CONSTRUCTION OF THE WORK. ALLOW TEN (10) BUSINESS DAYS FOR REVIEW FROM THE TIME SUBMITTALS ARE RECEIVED IN OUR OFFICE.
- ANY DEVIATION FROM, ADDITION TO, SUBSTITUTION FOR, OR MODIFICATION TO THE STRUCTURE OR ANY PART OF THE STRUCTURE DETAILED ON THESE DRAWINGS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW DO NOT CONSTITUTE "AS-BUILT" UNLESS IT IS CLEARLY NOTED THAT SPECIFIC CHANGES ARE BEING SUGGESTED.
- THE STRUCTURAL DRAWINGS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.
- THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHODS OF CONSTRUCTION UNLESS SO STATED OR NOTED. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE WORKMEN AND OTHER PERSONS DURING CONSTRUCTION.
- REFERENCES TO EXISTING BUILDING STRUCTURE ARE BASED ON EXISTING BUILDING DRAWINGS BY: JAMES P. SMITH, P.E. CONSULTING ENGINEER; SHEET NUMBERS: S101, 102, 103, 201, 202, 203, 301, 302, 303, 304, 401, 402, 403, AND 5501; DATED: 01-22-1996.

## SPECIAL INSPECTION

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION: (REFERENCE ADJACENT TABLES FOR ADDITIONAL INFORMATION.)

- SUBGRADE PREPARATION AND FOUNDATION BEARING
- REINFORCED CONCRETE OVER 2500 PSI
- REINFORCING STEEL
- FIELD WELDING
- EPOXY ANCHOR BOLT INSTALLATION

## DESIGN LOADS

- |                           |  |
|---------------------------|--|
| 1. SECOND FLOOR LIVE LOAD | 100 PSF (ASSEMBLY MOVABLE SEATS)       |
| 2. SECOND FLOOR LIVE LOAD | 80 PSF (CORRIDORS)                     |
| 3. SECOND FLOOR LIVE LOAD | 50 PSF + 15 PSF (OFFICES + PARTITIONS) |
| 4. SECOND FLOOR DEAD LOAD | 47 PSF                                 |

## CONCRETE

- ALL CONCRETE SHALL BE NORMAL WEIGHT, WITH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS, (U.N.O.)
- MINIMUM CEMENT CONTENT SHALL BE 5 SACKS PER CUBIC YARD.
- TYPE C OR F FLY ASH MAY BE USED UP TO 20% OF TOTAL CEMENT CONTENT BY VOLUME. THIS IS ONLY FOR CONCRETE SPECIFIED IN THESE STRUCTURAL DRAWINGS. REFER TO SPECIFICATIONS BY OTHER DISCIPLINES.
- MAXIMUM SLUMP SHALL BE 5 IN., U.N.O.
- MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE'S "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 301.
- CONCRETE MIX SHALL NOT USE ANY ADMIXTURES WHICH CONTAIN CALCIUM CHLORIDE.
- CONCRETE TEST REPORTS SHALL BE MADE AVAILABLE AT THE JOB SITE.

## REINFORCING STEEL

- BARs SHALL BE ASTM A615, GRADE 60.
- DETAIL, FABRICATE, AND PLACE IN CONFORMANCE WITH ACI 315 AND 318.
- LAP ALL REINFORCING STEEL 40 BAR DIAMETERS (U.N.O.)
- LAP CONTINUOUS BARS IN GRADE BEAMS 40 BAR DIAMETERS (U.N.O. ON DRAWINGS). TOP BARS TO BE SPLICED BETWEEN SUPPORTS AND BOTTOM BARS TO BE SPLICED AT SUPPORTS, AS APPLICABLE.
- PROVIDE ACCESSORIES FOR SUPPORT OF ALL REINFORCING.
- SUBMIT SHOP DRAWINGS SHOWING ALL REINFORCING FOR APPROVAL BY THE STRUCTURAL ENGINEER OF RECORD.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:

	MINIMUM COVER, IN.
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3
B. CONCRETE EXPOSED TO EARTH OR WEATHER: #6 THROUGH #18 BAR	2
#5 BAR, W31 OR D31 WIRE, AND SMALLER	1 1/2
C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS, WALLS, JOISTS: #14 AND #18 BARS	1 1/2
#11 BAR AND SMALLER	3/4
BEAMS, COLUMNS: PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS	1 1/2

## POST-INSTALLED ANCHORS

- EXCEPT WHERE NOTED ON DRAWINGS, THE FOLLOWING SIMPSON PRODUCTS MAY BE USED. CONTACT WWW.STRONGTIE.COM FOR ADDITIONAL PRODUCT DATA.
  - ALL DRILLED AND EPOXED ANCHOR BOLTS PLACED IN CRACKED OR UNCRACKED CONCRETE SHALL BE THREADED RODS WITH SIMPSON SET-XP ADHESIVE SYSTEM OR APPROVED EQUAL (TYP., U.N.O.) ICC ESR-2508.
  - ALL DRILLED AND EPOXED REBAR PLACED IN CRACKED OR UNCRACKED CONCRETE SHALL UTILIZE THE SIMPSON SET-XP ADHESIVE SYSTEM OR APPROVED EQUAL (TYP., U.N.O.) ICC ESR-2508.
    - ANCHORAGE TO CONCRETE:
      - ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
        - HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HIT-Z ROD PER ICC ESR-3187.
        - HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT SYSTEM WITH HAS-E THREADED ROD PER ICC ESR-3187.
        - HILTI HIT-RE 500-SD EPOXY ADHESIVE ANCHORING SYSTEM WITH HAS-E THREADED ROD PER ICC ESR-2322 FOR SLOW CURE APPLICATIONS.
      - MEDIUM DUTY MECHANICAL ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
        - HILTI KWIK HUS EZ AND KWIK HUS EZ-1 SCREW ANCHORS PER ICC ESR-3027
        - HILTI KWIK BOLT-TZ EXPANSION ANCHORS PER ICC ESR-1917
        - HILTI KWIK BOLT 3 EXPANSION ANCHORS (UNCRACKED CONCRETE ONLY) PER ICC ESR-2302
      - HEAVY DUTY MECHANICAL ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
        - HILTI HDA UNDERCUT ANCHORS PER ICC ESR 1546
        - REBAR DONELING INTO CONCRETES
    - ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
      - HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT SYSTEM WITH CONTINUOUSLY DEFORMED REBAR PER ICC ESR-3187.
      - HILTI HIT-RE 500-SD EPOXY ADHESIVE ANCHORING SYSTEM WITH CONTINUOUSLY DEFORMED REBAR PER ICC ESR-2322.
  - ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED OR SUCH OTHER METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE.
  - INSTALL ANCHORS PER THE MANUFACTURER INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING.
  - INSTALL ACCORDING TO MANUFACTURER'S SPECIFICATIONS. THREADED ROD AND REBAR DIAMETERS AND EMBEDMENT LENGTHS SHALL BE AS NOTED ON DRAWINGS.
  - OVERHEAD ADHESIVE ANCHORS MUST BE INSTALLED USING PRODUCTS WHICH HAVE SPECIFIC APPLICATIONS THAT ARE INTENDED FOR OVERHEAD USE.
  - THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ON-SITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.
  - ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
  - EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. UNLESS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT, THE CONTRACTOR SHALL REVIEW THE EXISTING STRUCTURAL DRAWINGS AND SHALL UNDERTAKE TO LOCATE THE POSITION OF THE REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS, BY FERROSCAN, GPR, X-RAY, CHIPPING OR OTHER MEANS.

## STRUCTURAL STEEL

- SHAPES AND PLATES SHALL BE ASTM A36, U.N.O.
- WIDE FLANGE SHAPES SHALL BE ASTM A992, GRADE 50.
- ANCHOR BOLTS SHALL BE ASTM F1554, TYPICAL, U.N.O.
- HSS STEEL SHALL BE ASTM A500, GRADE B.
- ROUND PIPE SECTIONS SHALL BE ASTM A53, GRADE B, U.N.O.
- BOLTS SHALL BE ASTM A325, 3/4" DIA. (MIN.), U.N.O.
- STEEL DESIGN IS BASED ON THE CURRENT AISC MANUAL OF STEEL CONSTRUCTION (ASD).
- WELDING ELECTRODES SHALL BE SERIES E70XX.
- PERFORM WELDING IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY'S AWS D1.1 "STRUCTURAL WELDING CODE".
- STEEL FABRICATORS SHALL BE A COMPANY THAT IS CERTIFIED BY AISC.  
(NOTE: IF NOT CERTIFIED BY AISC, THEN SPECIAL INSPECTION FOR REVIEW OF SHOP FABRICATION AND QUALITY CONTROL PROCEDURES IS REQUIRED.)
- SUBMIT SHOP DRAWINGS SHOWING LAYOUT OF MEMBERS, BRIDGING, BRACING AND ERECTION DETAILS.
- SHOP PAINT: STANDARD RED PRIMER, U.N.O. IN SPECIFICATIONS. CONTRACTOR TO COORDINATE PAINT WITH PROPOSED FINISHES AS APPLICABLE.
- FASTENERS FOR PRESERVATIVE-TREATED AND FIRE-RETARDANT-TREATED WOOD SHALL BE HOT-DIPPED ZINC-COATED GALVANIZED STEEL.

## Statement of Special Inspections

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- |  |  |
|--|--|
| <input type="checkbox"/> Soils and Foundations             | <input checked="" type="checkbox"/> Structural Steel |
| <input checked="" type="checkbox"/> Cast-in-Place Concrete | <input type="checkbox"/> Wood Construction           |
| <input type="checkbox"/> Masonry                           | <input checked="" type="checkbox"/> Special Cases    |

## General Notes

The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

The qualifications of all personnel performing Special Inspections and testing activities are subject to the approval of the Building Official and E.O.R. The credentials of all inspectors and testing technicians shall be provided if requested.

The special inspectors shall keep records of inspections and shall furnish inspection reports to the owner, Engineer of Record, E.O.R., and Architect of Record, A.O.R. Field and testing result reports shall be submitted to all designated parties as they are completed. The reports shall indicate that the work performed was done in accordance to the construction drawings. Discrepancies shall be brought to the attention of the general contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the E.O.R. prior to completion of that phase of work. A final report that documents required special inspections and corrections of discrepancies shall be submitted by the General Contractor to the Owner, E.O.R. and A.O.R.

## Structural Steel

Item	Scope	Monitoring: Periodic (P) Continuous (C)
1. Fabricator Certification/Quality Control Procedures	Review shop fabrication and quality control procedures. (Note: Fabricator may be exempt if certified by AISC.)	P
2. Material Certification	Review certified mill test reports and identification markings on wide-flange shapes, high-strength bolts, nuts and welding electrodes.	P
3. Bolting	Inspect installation and tightening of high-strength bolts. Verify that splices have separated from tension control bolts. Verify proper tightening sequence. Continuous inspection of bolts to slip-critical connections. Bolted connections shall be tested for the snug tight method (25% of the bolted connections shall be inspected for this method.)	P/C
4. Welding	Visually inspect all welds. Inspect pre-heat, post-heat and surface preparation between passes. Verify size and length of fillet welds.  Ultrasonic testing of all full-penetration welds. • Complete and partial penetration groove welds shall be inspected continuously. • Multi-pass fillet welds shall be inspected continuously. • Single-pass fillet welds (> 3/8") shall be inspected continuously. • Single-pass fillet welds (< 3/8") shall be inspected periodically. • Floor and deck welds shall be inspected periodically.	P
5. Structural Details	Inspect steel frame for compliance with structural drawings, including bracing, member configuration and connection details.	P

## Cast-in-Place Concrete

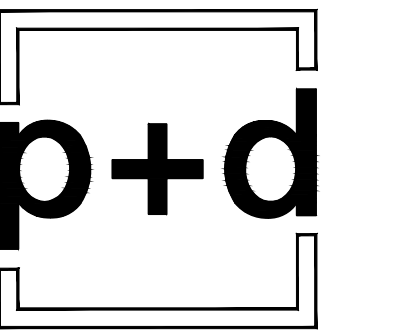
Item	Scope	Monitoring: Periodic (P) Continuous (C)
1. Mix Design	Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design. Submit proposed mix design of each class of concrete to Structural Engineer of Record and to inspection and testing firm for review prior to commencement of work.	P
2. Material Certification	Review for conformance to contract documents. Submit to Structural Engineer of Record for review.	P
3. Reinforcement Installation	Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters. Submit certified copies of mill test report of reinforcement materials analysis.	P
4. Anchor Rods	Inspect size, positioning and embedment of anchor rods. Inspect concrete placement and consolidation around anchors.	C
5. Concrete Placement	Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.	C
6. Sampling and Testing of Concrete	Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-contents (ASTM C231 or C173) and temperature (ASTM C1064). Three concrete test cylinders will be taken for every 75 or less cubic yards of each class of concrete placed, or concrete placed on any given day. One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete repressents.	C
7. Curing and Protection	Inspect curing, cold weather protection and hot weather protection procedures.	P

Note: Special Inspection is not required for flatwork: patios, driveway and sidewalk's, on grade not shown on structural drawings.

## Special Cases

Item	Scope	Monitoring: Periodic (P) Continuous (C)
Epoxy Anchors in Concrete or CMU	Review anchors and product being used for conformance to contract documents. Observe installation for compliance to manufacturers specifications. Perform pull tests to 125% of allowable design load per manufacturer specifications. (Minimum of 10% of total anchors, to include a minimum of one of each type, size or embedment.)	C

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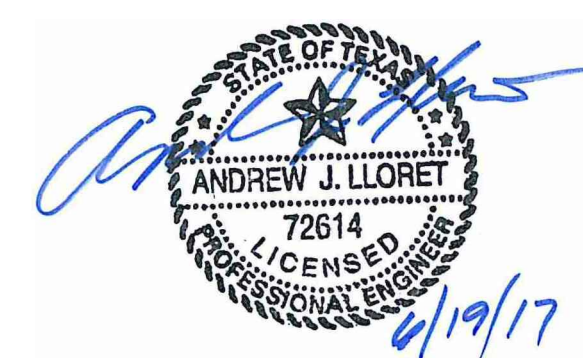
CITY COMMENTS 06.12.2017

PROJECT NO.: 16054

SHEET TITLE:  
**PHASE 1  
STRUCTURAL NOTES  
AND SPECIAL  
INSPECTIONS**

SHEET NO.:

**S001**



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