REINFORCED CONCRETE:

- CONCRETE SHALL HAVE NATURAL SAND FINE AGGREGATE AND NORMAL WEIGHT COARSE AGGREGATES, TYPE I PORTLAND CEMENT CONFORMING TO ASTM C150 AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF (FC') = 3,000 PSI AT 28 DAYS EXCEPT AS FOLLOWS:
- ALL CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE "CLASSES OF CONCRETE" TABLE BELOW UNLESS NOTED OTHERWISE ON THE DRAWINGS.

CLASSES OF CONCRETE (U.N.O)

STRUCTURAL ELEMENT	MIN. COMPRESSIVE STRENGTH (f'c) (U.N.O)	CONCRETE TYPE	EXPOSURE CLASSES	MAX. WITH CM RATION
AUGER CAST PILES	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
PILE CAPS	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
CAISSONS	3,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
MAT FOUNDATION	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
FOUNDATIONS	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
GRADE BEAMS	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
SLAB ON GRADE	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
PT SLAB ON GRADE	3,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
COLUMNS	REFER TO SCHEDULE FOR STRENGTH AT 28 DAYS	NORMAL WEIGHT CONCRETE	C1	0.5
SHEAR WALLS	REFER TO SCHEDULE FOR STRENGTH AT 28 DAYS	NORMAL WEIGHT CONCRETE	C1	0.5
BASEMENT WALLS	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
ALL OTHER FOUNDATION WALLS	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
VEHICLE BARRIER WALLS	4,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
ELEVATED PT SLABS AND BEAMS	5,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
ELEVATED REBAR ONLY SLABS AND BEAMS	5,000 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
TOPPING FOR WOOD DECK	3,000 PSI AT 28 DAY	LIGHTWEIGHT CONCRETE	C1	N/A
TOPPING FOR STEEL DECK	3,500 PSI AT 28 DAY	NORMAL WEIGHT CONCRETE	C1	0.5
TOPPING FOR PRECAST UNITS	3,000 PSI AT 28 DAY	LIGHTWEIGHT CONCRETE	C1	N/A

- CONCRETE AGGREGATES CONFORM TO ONE OF THE FOLLOWING SPECIFICATIONS: NORMALWEIGHT: ASTM C33 OR LIGHTWEIGHT: ASTM C330. FINE AGGREGATE SHALL BE NATURAL SAND.
- WATER USED IN MIXING CONCRETE SHALL CONFORM TO ASTM C1602. ANY NATURAL WATER THAT IS DRINKABLE (POTABLE) AND HAS NO PRONOUNCED TASTE OR ODOR IS SATISFACTORY AS MIXING WATER FOR MAKING CONCRETE.
- TOLERANCES FOR CONCRETE CONSTRUCTION: ACI 117
- MIXING, TRANSPORTING, AND PLACING OF CONCRETE SHALL CONFORM TO ACI 304.
- CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL NOT BE USED AS ADDITIVE
- CONCRETE CAST ON SOILS WITH SEVERE OR VERY SEVERE LEVELS OF SOLUBLE SULFATE SHALL BE TYPE V CEMENT.
- PROTECT CONCRETE FROM DAMAGE OR REDUCED STRENGTH FROM COLD OR HOT WEATHER IN COMPLIANCE WITH ACI 305 AND ACI 306.
- MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED, EXCEPT THAT SLABS ON GRADE NEED BE VIBRATED ONLY AROUND UNDER-FLOOR DUCTS, AROUND PENETRATIONS, EDGES, HOLDOWNS, AND POST-TENSIONING ANCHORS.
- MAXIMUM SLUMP 5.0 INCHES FOR CONCRETE WITHOUT PLASTICIZER. IF PLASTICIZER IS USED, A HIGHER FINAL SLUMP MAY BE ALLOWED UPON STRUCTURAL ENGINEER'S APPROVAL. MAXIMUM SLUMP TO BE 8 INCHES WHEN PUMPED.
- FLY ASH MAY BE USED PROVIDED IT MEETS ASTM C618 TYPE F AND DOES NOT EXCEED 20% OF THE WEIGHT OF TOTAL CEMENTATIONS MATERIAL FOR CONCRETE STRENGTH UP TO AND INCLUDING 3000 P.S.I., AND 25% OF THE WEIGHT OF TOTAL CEMENTATIONS MATERIAL FOR CONCRETE STRENGTH OF 4000 P.S.I.
- CEMENTATIONS MATERIALS AND SHALL HAVE A REPLACEMENT FACTOR OF 1.2 RELATIVE TO CEMENT REPLACED.
- NO FLY ASH ADDITIVES SHALL BE USED IN FLATWORK OR ARCHITECTURALLY EXPOSED CONCRETE
- CONCRETE FOR BALCONIES SHALL HAVE SAND FINE AGGREGATES, LIGHTWEIGHT COURSE AGGREGATES CONFORMING TO ASTM C330, TYPE 1 PORTLAND CEMENT CONFORMING TO ASTM C150, AND SHALL HAVE A MAXIMUM DRY DENSITY OF 120 POUNDS PER CUBIC FOOT. THE CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH (FC') OF 3000 PSI AT 28 DAYS. CONCRETE SHALL BE REINFORCED WITH FIBER MESH AT A RATE OF 1.5 POUNDS PER CUBIC YARD.
- A CONCRETE MIX DESIGN FOR EACH UNIQUE COMBINATION OF STRENGTH, COARSE AGGREGATE GRADATION AND WATER CEMENT RATIO SPECIFIED SHALL BE PREPARED BY THE SUPPLIER OR AN INDEPENDENT TESTING LABORATORY AND BE SUBMITTED FOR REVIEW PRIOR TO CASTING ANY CONCRETE. MIXES THAT WILL BE TRANSPORTED AT THE PROJECT SITE BY PUMPING SHALL BE SPECIFICALLY DESIGNED FOR PUMPING.
- ALL CONCRETE MIX SHALL BE DESIGNED BY A QUALIFIED REGISTERED ENGINEER & LAB CONCRETE MIX DESIGN DATA RESULTS SHALL BE SUBMITTED TO STRUCTURAL ENGINEER FOR REVIEW.
- CONCRETE MIX DESIGNS MUST BE SUBMITTED A MINIMUM OF 10 DAYS PRIOR TO THE START OF THE WORK FOR ENGINEER AND OWNER'S TESTING LABORATORY APPROVAL PRIOR TO PLACEMENT OF CONCRETE IN THE PLANT OR FIELD. ANY ADJUSTMENTS IN APPROVED MIX DESIGNS INCLUDING CHANGES IN ADMIXTURES MUST BE SUBMITTED IN WRITING TO THE ENGINEER AND OWNER'S TESTING LABORATORY FOR APPROVAL PRIOR TO USE IN THE FIELD.
- WATER REDUCING, AND AIR ENTRAINING AGENTS SHALL BE INCLUDED IN DESIGN MIXES. SUPER PLASTICIZERS MAY BE USED AT THE CONTRACTOR'S OPTION.
- AFTER COMPLETING THE SURFACE FINISH ON A CONCRETE POUR, THE POUR SHALL BE COVERED WITH PLASTIC AND KEPT DAMP FOR THE NEXT 3 DAYS MINIMUM.
- CURING COMPOUND MAY BE USED IN LIEU OF WET CURING. SUBMIT CURING COMPOUND TO ARCHITECT AND ENGINEER FOR REVIEW. CURING COMPOUNDS THAT MAY HAVE CONFLICT WITH THE FINISH SHALL NOT BE USED.
- CONTRACTOR SHALL SUBMIT A PLACING AND CURING PROCEDURE FOR EXPOSED CONCRETE IN AMENITIES AREA FOR ENGINEER, ARCHITECT AND OWNER'S REVIEW AND ACCEPTANCE.
- THE CONTRACTOR SHALL PROVIDE PROPER CURING TO MINIMIZE SHRINKAGE CRACKING AND ENSURE PROPER STRENGTH GAIN.
- EVALUATION AND ACCEPTANCE OF CONCRETE SHALL BE BASED ON CYLINDER STRENGTH TESTS AS OUTLINED IN THE APPLICABLE BUILDING CODE
- CONDUITS, PIPES AND SLEEVES OF ANY MATERIAL NOT HARMFUL TO CONCRETE AND WITHIN LIMITATIONS OF THIS SUBSECTION MAY BE EMBEDDED IN CONCRETE WITH APPROVAL OF THE STRUCTURAL ENGINEER, PROVIDED THEY ARE NOT CONSIDERED TO REPLACE STRUCTURALLY THE DISPLACED CONCRETE.

REINFORCED CONCRETE CONTINUOUS:

- CONDUITS AND PIPES OF ALUMINUM SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE UNLESS EFFECTIVELY COATED OR COVERED TO PREVENT ALUMINUM- CONCRETE REACTION OR ELECTROLYTIC ACTION BETWEEN ALUMINUM AND STEEL.
- CONDUITS, PIPES AND SLEEVES PASSING THROUGH A SLAB, WALL OR BEAM SHALL NOT IMPAIR SIGNIFICANTLY THE STRENGTH OF THE CONSTRUCTION.
- CONDUITS AND PIPES, WITH THEIR FITTINGS, EMBEDDED WITHIN A COLUMN SHALL NOT DISPLACE MORE THAN 4 PERCENT OF THE AREA OF CROSS SECTION ON WHICH STRENGTH IS CALCULATED OR WHICH IS REQUIRED FOR FIRE PROTECTION.
- EXCEPT WHEN PLANS FOR CONDUITS AND PIPES ARE APPROVED BY THE STRUCTURAL ENGINEER, CONDUITS AND PIPES EMBEDDED WITHIN A SLAB, WALL OR BEAM (OTHER THAN THOSE MERELY PASSING THROUGH) SHALL SATISFY THE FOLLOWING:
- THEY SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN ONE THIRD THE OVERALL THICKNESS OF SLAB, WALL OR BEAM IN WHICH THEY ARE EMBEDDED.
- THEY SHALL BE SPACED NOT CLOSER THAN THREE DIAMETERS OR WIDTHS ON CENTER.
- THEY SHALL NOT IMPAIR SIGNIFICANTLY THE STRENGTH OF THE CONSTRUCTION.
- PIPES AND FITTINGS SHALL BE DESIGNED TO RESIST EFFECTS OF THE MATERIAL, PRESSURE AND TEMPERATURE TO WHICH THEY WILL BE SUBJECTED.
- NO LIQUID, GAS OR VAPOR, EXCEPT WATER NOT EXCEEDING 90' OR 50 PSI PRESSURED, SHALL BE PLACED IN THE PIPES UNTIL THE CONCRETE HAS ATTAINED ITS DESIGN STRENGTH.
- IN ALL SOLID SLAB PIPING SHALL BE PLACED BETWEEN TOP AND BOTTOM REINFORCEMENT.
- CONCRETE COVER FOR PIPES, CONDUIT AND FITTINGS SHALL NOT BE LESS THAN 1 1 /2" INCHES FOR CONCRETE EXPOSED TO EARTH OR WEATHER, OR LESS THAN 3/4" INCH FOR CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND.
- REINFORCEMENT WITH AN AREA NOT LESS THAN 0.002 TIMES THE AREA OF CONCRETE SECTION SHALL BE PROVIDED NORMAL TO THE PIPING.
- PIPING AND CONDUIT SHALL BE SO FABRICATED AND INSTALLED THAT CUTTING, BENDING OR DISPLACEMENT OF REINFORCEMENT FROM ITS PROPER LOCATION WILL NOT BE REQUIRED.
- ALL CONCRETE SLABS OVER STEEL DECK SHALL BE BOUND BY CONTROL JOINTS (KEYED OR SAW CUT) SUCH THAT THE ENCLOSED AREA DOES NOT EXCEED 900 SQUARE FEET. CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS FOR APPROVAL PRIOR TO CONSTRUCTION.
- VERIFY LOCATION OF ALL CONTROL JOINTS IN CONCRETE TOPPING SLABS OVER PRECAST ELEMENTS (HAMBRO JOISTS) WITH MANUFACTURER. TOOLED JOINTS SHALL OCCUR AT ENDS AND SIDES OF ALL INDIVIDUAL PRECAST ELEMENTS.
- RE-VIBRATE TOPS OF CAISSONS 15 MINUTES AFTER PLACING CONCRETE.
- HORIZONTAL CONCRETE TOP SURFACES AT BALCONIES, RAMPS AND ROOF DECKS WHICH ARE EXPECTED TO BE CONTINUOUSLY EXPOSED TO THE WEATHER SHALL BE TREATED WITH A LIQUID APPLIED MEMBRANE COATING. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS IN ANY CONCRETE POURS UNLESS SHOWN ON THE DRAWINGS. THE ARCHITECT/ENGINEER SHALL APPROVE ALL DEVIATIONS OR ADDITIONAL JOINTS IN WRITING. WHEREVER FEASIBLE, THE WALL SHALL NOT BE BACKFILLED UNTIL BASEMENT AND GROUND FLOOR SLABS HAVE ATTAINED 70 PERCENT OF THEIR SPECIFIED 28 DAY STRENGTH.
- IF THE WALLS ARE BACKFILLED PRIOR TO COMPLETION OF GROUND AND BASEMENT FLOORS AS SPECIFIED ABOVE, THE WALL SHALL BE BRACED FOR THE SPECIFIED DESIGN PRESSURE. THE ADEQUACY OF SUCH BRACES IS SUBJECT TO THE ENGINEER'S APPROVAL.
- FOR THE MAT POUR, THE MAXIMUM CONCRETE TEMPERATURE SHALL NOT EXCEED 90 DEGREES F. IN CASE OF HIGHER TEMPERATURES, THE CONCRETE SHOULD BE COOLED TO 90 DEGREES F BY USING APPROXIMATELY 7 LBS. OF ICE/DEGREE F/CU.YD. OF CONCRETE.
- THE CONCRETE FOR THE MAT SHALL BE PLACED IN A CHECKERBOARD FASHION. THE SIZE OF PLACEMENT AND COMBINATION JOINTS ARE SUBJECT TO THE ENGINEER'S APPROVAL. THE MINIMUM TIME THAT SHALL LAPSE BETWEEN TWO POURS SHALL BE 48 HOURS. KEY SHALL BE PROVIDED AT JOINTS AS APPROVED BY THE ENGINEER. THE SPLICING OF REINFORCING AND ITS LOCATION SHALL BE SUBJECT TO ENGINEER'S APPROVAL.

REINFORCING STEEL (REBAR): ACI318-11:

REINFORCING STEEL (REBAR): ACI318-11

FABRICATE, DETAIL, AND PLACE IN ACCORDANCE WITH BUILDING CODE BY THE FOLLOWING:

- ACI 315 DETAILS AND DETAILING OF THE CONCRETE REINFORCEMENT.
- ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
- AWS D1.4 STRUCTURAL WELDING CODE-REINFORCING STEEL.
- DEFORMED BAR REINFORCEMENT ASTM A615 GR 60 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- WELDED DEFORMED BAR REINFORCEMENT ASTM A706 GR 60 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- PLAIN WELDED WIRE REINFORCEMENT (FLAT SHEET) ASTM A 1064, YIELD STRENGTH 65,000 PSI.
- DEFORMED WELDED WIRE REINFORCEMENT: ASTM A 1064, YIELD STRENGTH 70,000 PSI.
- HEADED SHEAR STUDS FOR SHEAR REINFORCEMENT: ASTM A 1044 WITH A MINIMUM YIELD STRENGTH OF 51,000 PSI.
- DEFORMED BAR ANCHORS: AWS D1.1 TYPE C (TABLE 7.1) STUDS MANUFACTURED IN CONFORMANCE WITH SPECIFICATION ASTM A 1064 WITH A MINIMUM YIELD STRENGTH 70,000 PSI. REINFORCING BARS SHALL NOT BE SUBSTITUTED FOR DEFORMED BAR ANCHORS.
- HEADED STUD ANCHORS FOR EMBEDDED PLATES: AWS D1.1 TYPE A STUDS MANUFACTURED IN CONFORMANCE WITH SPECIFICATION ASTM A 29 WITH A MINIMUM YIELD STRENGTH OF 61,000 PSI.
- FIELD BENT BARE (#5 AND SMALLER) ASTM A706. ASTM A615 REINFORCING BARS #5 AND SMALLER MAY BE FIELD BENT ONE TIME DURING CONSTRUCTION. BENDING A BAR OUT THE WAY AND BACK MAY BE BENT TWO TIMES MAXIMUM.
- FIELD BENDING FOR #6 AND LARGER REQUIRES SPECIFIC APPROVAL BY ENGINEER.
- WELDING ELECTRODES SHALL CONFORM TO MATCHING FILLER METAL REQUIREMENTS DEFINED BY AWS D1.4 MATCHING FILLER METALS REQUIREMENTS.
- WHERE WELDING OR REINFORCING IS SPECIFIED, BARS SHALL CONFORM TO ASTM A706. DO NOT □WELD REINFORCING STEEL UNLESS SPECIFIED BY DESIGN OR WITHOUT AUTHORIZATION OF THE ENGINEER.
- DO NOT TACK-WELD REINFORCING STEEL.
- SUPPORT REINFORCEMENT WITH APPROVED CHAIRS, SPACERS, OR TIES. ALL CONCRETE SLAB REINFORCING STEEL SHALL BE SUPPORTED AT THE REQUIRED HEIGHTS BY APPROVED BOLSTERS. ALL REINFORCEMENT AND EMBEDS SHALL BE SECURELY TIED IN PLACE AND SHALL BE CAPABLE OR SUPPORTING THE WEIGHT OF ANY□ □WORKER □WITHOUT DISLODGING.
- ALL STRUCTURAL ANCHOR BOLTS SHALL BE SECURED IN PLACE AND INSPECTED PRIOR TO DELIVER OF CONCRETE. INSPECTION OF EMBEDDED ITEMS INTO □WET CONCRETE (WET SETTING) IS PROHIBITED UNLESS APPROVED PRIOR TO CONSTRUCTION.
- IN □WALLS AND SLABS, PLACE (2)-#5 BARS AROUND ALL OPENINGS AND RECESSES UNLESS NOTED OTHERWISE. EXTEND THESE BARS AT LEAST 2' -0" BEYOND THE CORNER OF THE OPENINGS UNLESS NOTED OTHERWISE. WHERE BARS CANNOT BE EXTENDED 2' -0" BEYOND THE OPENING, EXTEND AS FAR AS POSSIBLE AND TERMINATE THE BAR WITH A STANDARD HOOK.
- IN WALLS AND SLABS, PLACE (2) #5 X 2'-0" DIAGONAL BARS AT THE CORNERS OR ALL OPENINGS.
- AT □WALLS AND FOOTING INTERSECTIONS AND CORNERS, PLACE CORNER BARS SAME SIZE AND SPACING AS HORIZONTAL BARS AND LAP SPLICE TO HORIZONTAL BARS.
- SEE TYPICAL BAR DETAILS FOR BENDS AND HOOKS, HOOPS, TIES AND CORNER CONDITIONS.

REINFORCING STEEL (REBAR): ACI318-11 - CONTINUOUS:

- GRADE BEAMS, SHALL HAVE CONTINUOUS TOP BARS LAPPED AT MID-SPAN BETWEEN SUPPORTS WITH A CLASS B TENSION SPLICE. BOTTOM BARS SHALL BE LAPPED AT THE SUPPORTS WITH A CLASS B TENSION SPLICE. ALL BEAM BARS SHALL BE HOOKED AT DISCONTINUOUS END, UNLESS NOTED OTHERWISE.
- FOR THE BASEMENT WALLS, VERTICAL BARS PLACED ON THE DIRT FACE SIDE SHALL BE LAPPED AT MIDSPAN BETWEEN SUPPORTS WITH A CLASS B TENSION SPLICE. VERTICAL BARS PLACED OPPOSITE THE DIRT FACE SIDE SHALL BE LAPPED AT THE SUPPORTS WITH A CLASS B TENSION SPLICE. HORIZONTAL BARS SHALL HAVE A CLASS B TENSION SPLICE.
- HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90 DEGREE BENDS AND EXTENSIONS AT CORNERS AND INTERSECTIONS AS SHOWN ON TYPICAL BAR PLACING DETAILS.
- LAP WELDED WIRE FABRIC AT LEAST 1 1/2 SQUARES PLUS WIRE END EXTENSIONS BUT NOT LESS THAN TWELVE (12) INCHES, UNLESS NOTED OTHERWISE. EXTEND MESH ACROSS SUPPORTING BEAMS AND WALLS.
- CONCRETE COVER FOR THE HEADS AND BASE RAILS OF HEADED SHEAR STUD REINFORCEMENT IN CONCRETE SLABS SHALL CONFORM TO THE REQUIREMENTS SPECIFIED FOR THE REINFORCING STEEL COVER. THE CONCRETE COVER FOR THE HEADS OR BASE RAILS SHALL NOT BE LESS THAN THAT REQUIRED FOR THE REINFORCEMENT IN THE TYPE OF MEMBER IN WHICH THE HEADED SHEAR STUD REINFORCEMENT IS PLACED. COVER IN STRUCTURAL MEMBERS NOT SPECIFIED SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS.
- ALL SPLICE LOCATIONS SUBJECT TO APPROVAL BY THE STRUCTURAL ENGINEER. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT ALL CORNERS AND INTERSECTIONS PER TYPICAL DETAILS. REINFORCING BAR SPACING GIVEN ARE MAXIMUM ON CENTERS. ALL BARS PER CRSI SPECIFICATIONS AND HANDBOOK. DOWEL ALL VERTICAL REINFORCING TO FOUNDATION WITH STANDARD 90-DEGREE HOOKS UNLESS NOTED OTHERWISE. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE. CONCRETE COLUMN DOWEL EMBEDMENT SHALL BE A STANDARD COMPRESSION DOWEL WITH EMBEDMENT LENGTH ACCORDING TO THE LATEST EDITION OF THE ACI 318. UNLESS NOTED OTHERWISE ON DRAWING, ALL VERTICAL REINFORCEMENT IN COLUMNS SHALL BE SPLICED FOR MINIMUM OF 30 BAR DIAMETERS

CONCRETE PROTECTION FOR REINFORCEMENT ACI318-11 SECTION 7.7:

- COVER SPECIFIED SHALL BE CONSIDERED MINIMUMS THAT MAY REQUIRE INCREASING WHERE REINFORCING STEEL INTERSECTS FOR DIFFERENT MEMBER TYPES. COVER IN STRUCTURAL MEMBERS NOT SPECIFIED IN THE DETAILS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS. THE REINFORCING STEEL DETAILER SHALL ADJUST REINFORCING STEEL GAGE SIZES AT INTERSECTING STRUCTURAL MEMBERS AS REQUIRED TO ALLOW CLEARANCE FOR INTERSECTING REINFORCING BAR LAYERS WITH MINIMUM SPECIFIED COVER.

CAST-IN-PLACE CONCRETE (NONPRESTRESSED):
THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT, BUT SHALL NOT BE LESS THAN REQUIRED BY SECTIONS 7.7.6 OR 7.7.8 OF ACI318:

- CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH --- 3" MINIMUM COVER

CONCRETE EXPOSED TO EARTH OR WEATHER:

- NO. 6 THROUGH NO. 18 BARS --- 2" MINIMUM COVER
- NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER ---1-1/2" MINIMUM COVER

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
SLABS, WALLS, JOISTS:

- NO. 14 AND NO. 18 BARS --- 1-1/2" MINIMUM COVER
- NO. 11 BAR AND SMALLER ---3/4" MINIMUM COVER

BEAMS, COLUMNS:

- PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS --- 1-1/2" MINIMUM COVER

SHELLS, FOLDED PLATE MEMBERS:

- NO. 6 BAR AND LARGER ---3/4" MINIMUM COVER
- NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER --- 1/2" MINIMUM COVER

CAST-IN-PLACE CONCRETE (PRESTRESSED):
THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR PRESTRESSED AND NONPRESTRESSED REINFORCEMENT, DUCTS, AND END FITTINGS, BUT SHALL NOT BE LESS THAN REQUIRED BY SECTIONS 7.7.6, 7.7.6.1 OR 7.7.8. OF ACI318:

- CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH --- 3" MINIMUM COVER

CONCRETE EXPOSED TO EARTH OR WEATHER:

- WALL PANELS, SLABS, JOISTS --- 1" MINIMUM COVER
- OTHER MEMBERS --- 1-1/2" MINIMUM COVER

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:

- SLABS, WALLS, JOISTS --- 3/4" MINIMUM COVER

BEAMS, COLUMNS:

- PRIMARY REINFORCEMENT --- 1-1/2" MINIMUM COVER
- TIES, STIRRUPS, SPIRALS --- 1" MINIMUM COVER

SHELLS, FOLDED PLATE MEMBERS:

- NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER --- 3/8" MINIMUM COVER
- OTHER REINFORCEMENT --- Db BUT NOT LESS THAN 3/4" MINIMUM COVER

CORROSIVE ENVIRONMENTS:
SECTION 7.7.6 OF ACI318:

- IN CORROSIVE ENVIRONMENTS OR OTHER SEVERE EXPOSURE CONDITIONS, AMOUNT OF CONCRETE PROTECTION SHALL BE SUITABLY INCREASED, AND THE PERTINENT REQUIREMENTS FOR CONCRETE BASED ON APPLICABLE EXPOSURE CATEGORIES IN CHAPTER 4 OF ACI318 SHALL BE MET, OR OTHER PROTECTION SHALL BE PROVIDED.

SECTION 7.7.6.1 OF ACI318:

- FOR PRESTRESSED CONCRETE MEMBERS EXPOSED TO CORROSIVE ENVIRONMENTS OR OTHER SEVERE EXPOSURE CATEGORIES SUCH AS THOSE DEFINED IN CHAPTER 4 OF ACI318, AND WHICH ARE CLASSIFIED AS CLASS T OR C IN 18.3.3, SPECIFIED CONCRETE COVER SHALL NOT BE LESS THAN 1.5 TIMES THE COVER FOR PRESTRESSED REINFORCEMENT REQUIRED BY 7.7.2 AND 7.7.3. THIS REQUIREMENT SHALL BE PERMITTED TO BE WAIVED IF THE PRE-COMPRESSED TENSILE ZONE IS NOT IN TENSION UNDER SUSTAINED LOADS.

FIRE PROTECTION:
SECTION 7.7.8 OF ACI318:

- IF THE GENERAL BUILDING CODE REQUIRES A THICKNESS OF COVER FOR FIRE PROTECTION GREATER THAN THE CONCRETE COVER IN 7.7.1 THROUGH 7.7.7, SUCH GREATER THICKNESSES SHALL BE SPECIFIED.

PLOT DATE: 8/19/2019 8:20:39 PM TEMPLATE VERSION:

DLD ENGINEERING
18106 FIRST BEND DR.
CYPRESS, TX. 77433
O:832.422.9350

ARCHITECT

O 281 410 1349
www.wsquaredarch.com
W |S|QUARED| ARCHITECTS

DESIGN ARCHITECT
W SQUARE ARCHITECTS
3302 CANAL STREET, SUITE 36
HOSUTON, TX 77003
PHONE: (281) 410-1349

GREATER HEIGHTS SCHOOL
HOUSTON, TEXAS

STATE OF TEXAS
SLAVEN SEFEROVIC
106824
LICENSED
PROFESSIONAL ENGINEER

07/22/2019

TEXAS REGISTERED ENGINEERING FIRM F-17306

THE INFORMATION DISCLOSED HEREIN IS PROPRIETARY WITH DLD ENGINEERING LLC., AND SHOULD NOT BE USED, DUPLICATED OR DISCLOSED WITHOUT ITS EXPRESS WRITTEN PERMISSION.

UNAUTHORIZED USE OR COPYING OF THIS OR ANY CONTENTS HEREOF IS STRICTLY FORBIDDEN

PROJECT: 002-1029.19.00
DRAWN BY: PM
CHECKED BY: SS
DRAWING SCALE: AS NOTED

REVISION

NO.	DESCRIPTION	DATE

DATE
07.22.2019

ISSUE
PERMIT SET

BUILDING TITLE
GH SCHOOL
4724 N MAIN STREET

SHEET TITLE
CONCRETE - GENERAL STRUCTURAL NOTES

SHEET NO.
S0.20