## CAST-IN-PLACE CONCRETE MISC. DIRECTIONS

1. MIXING, TRANSPORTING AND PLACING OF CONCRETE SHALL CONFORM TO ACI 301.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS, LOCATIONS AND DETAILS OF ALL ARCHITECTURAL FEATURES IN THE CONCRETE; REFER TO THE ARCHITECTURAL DRAWINGS AND PROJECT SPECIFICATIONS FOR REQUIREMENTS FOR ALL CONCRETE FINISHES; REFER TO THE ARCHITECTURAL DRAWINGS FOR TOP OF WALL ELEVATIONS FOR ALL WALLS WHERE TOP OF WALL ELEVATIONS ARE NOT INDICATED ON THE STRUCTURAL DRAWINGS.
3. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN, ENGINEERING, AND CONSTRUCTION OF FORMWORK, CAPABLE OF SUPPORTING ALL APPLIED LOADS UNTIL THE CONCRETE IS ADEQUATELY CURED, WITHIN ALLOWABLE TOLERANCES AND DEFLECTION LIMITS.
4. ALL REINFORCEMENT SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. ADDITIONAL BARS, STIRRUPS OR CHAIRS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT AND PROVIDE MINIMUM REINFORCEMENT COVER FOR ALL BARS.
5. BONDING AGENT SHALL BE USED WHERE NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE.
6. ALL BEAMS, SPANDRELS AND SLABS ARE TO BE PLACED MONOLITHICALLY UNLESS OTHERWISE SHOWN.
7. WHERE MASONRY ABUTS CONCRETE WALLS, PROVIDE DOVETAIL SLOTS AND MASONRY ANCHORS.
8. THE CONCRETE SLABS SHALL BE FINISHED FLAT AND LEVEL WITHIN TOLERANCE, TO THE ELEVATION INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CONCRETE REQUIRED DUE TO FORMWORK, METAL DECK, AND FRAMING DEFLECTION TO ACHIEVE THIS FINISHED TOP OF SLAB ELEVATION. THE CONTRACTOR SHALL PROVIDE FOR A MINIMUM OF 5/8" AVERAGE THICKNESS FOR ADDITIONAL CONCRETE DURING PLACEMENT FOR ALL SLABS SUPPORTED AND FORMED ON STEEL DECK OVER THE ENTIRE FLOOR AREA. THE CONTRACTOR SHALL PROVIDE THE MEANS BY WHICH THE MAXIMUM AND MINIMUM CONCRETE SLAB THICKNESS CAN BE MONITORED AND VERIFIED DURING AND AFTER THE PLACING AND FINISHING OPERATIONS.
9. REPAIR CONCRETE EXHIBITING VOIDS DUE TO SNAP TIES, "HONEYCOMBS," ROCK POCKETS, AND RUNS, SPALLS OR OTHERWISE DAMAGED SURFACES WITH DRY PACK OR CEMENT GROUT, AND FINISH FLUSH WITH ADJOINING SURFACES. AT THE DISCRETION OF THE STRUCTURAL ENGINEER OR AS QUALIFIED BY LAB TESTING, EXCESSIVE HONEYCOMBS OR EXPOSED REINFORCEMENT THAT JEOPARDIZE THE DESIGN, SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR.
10. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE INDICATED.
11. CONTRACTOR SHALL TAKE EVERY PRECAUTION TO PROTECT FINISHED SURFACES FROM STAINS OR ABRASIONS. NO FIRE SHALL BE ALLOWED IN DIRECT CONTACT WITH CONCRETE. PROVIDE ADEQUATE PROTECTION AGAINST INJURIOUS ACTION BY SUN OR WIND. FRESH CONCRETE SHALL BE THOROUGHLY PROTECTED FROM HEAVY RAIN, FLOWING WATER, AND MECHANICAL INJURY.
12. TOPS OF FOUNDATIONS SHALL BE TROWEL FINISHED AND SMOOTH.
13. PROVIDE 10 MIL. VAPOR BARRIER (SLAB) & WATERPROOFING MEMBRANE (ELEVATOR PIT) IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. REFERENCE ARCHITECTURAL DRAWINGS FOR SPECIFICATIONS FOR WATERPROOFING MEMBRANE.
14. WATER SHALL NOT BE ADDED TO THE CONCRETE AT THE JOBSITE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE REQUIREMENTS OF THE CONCRETE SUPPLIER AND PUMPER TO ENSURE PUMPABLE AND WORKABLE MIX WITHOUT THE ADDITION OF WATER AT THE JOBSITE. THE USE OF PLASTICIZERS, RETARDANTS AND OTHER ADDITIVES SHALL BE AT THE OPTION OF THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER. FOLLOW THE RECOMMENDATIONS OF THE MANUFACTURER FOR PROPER USE OF RETARDANTS AND OTHER ADDITIVES. USE OF CALCIUM E CHLORIDE OR OTHER CHLORIDE BEARING SALTS SHALL NOT BE PERMITTED.
15. PLACE CONCRETE IN A MANNER SO AS TO PREVENT SEGREGATION OF THE MIX. DELAY FLOATING AND TROWELING OPERATIONS UNTIL THE CONCRETE HAS LOST SURFACE WATER SHEEN OR ALL FREE SLAB SURFACE. FINISHING OF SLAB SURFACES SHALL COMPLY WITH ACI RECOMMENDATIONS 302-89 AND 304-89 FOR GARAGES.
16. CONTRACTOR SHALL PROTECT CONCRETE THAT IS NOT AIR ENTRAINED BUT WHICH IS EXPOSED TO WEATHER DURING CONSTRUCTION FROM FREEZE THAW DAMAGE UNTIL SUCH TIME AS THE CONDITIONS IS NO LONGER EXPOSED TO FREEZE/THAW CONDITIONS.
17. FOUNDATION SURFACES AGAINST WHICH CONCRETE IS TO BE PLACED MUST BE FREE FROM STANDING WATER, MUD AND DEBRIS. SURFACES SHALL BE CLEAN AND FREE FROM OIL, OBJECTIONABLE COATINGS, AND LOOSE OR UNSOUND MATERIAL.
18. PROTECT CONCRETE FROM SUN AND RAIN. DO NOT PERMIT CONCRETE TO BECOME DRY DURING CURING PERIOD. CONCRETE SHALL NOT BE SUBJECTED TO ANY LOADS UNTIL CONCRETE IS COMPLETELY CURED, AND UNTIL CONCRETE HAS ATTAINED ITS 28 DAY STRENGTH AND 14 DAYS MINIMUM.
19. UPON COMPLETION OF FINISHING OPERATION, THE SURFACE OF SLABS SHALL BE SEALED AGAINST MOISTURE LOSS FOR 7 DAYS BY THE APPLICATION OF A CURING MEMBRANE OR BLANKET.
20. CONCRETE IN FORMS SHALL BE KEPT MOIST UNTIL REMOVAL. IMMEDIATELY UPON REMOVAL OF FORMS, AN APPROVED SPRAYED-ON CURING COMPOUND SHALL BE APPLIED TO THE CONCRETE SURFACES IN STRICT COMPLIANCE WITH THE MANUFACTURERS RECOMMENDATIONS. CURING SHALL BE MAINTAINED FOR 7 DAYS.
21. PROVIDE 7 DAY CURING IMMEDIATELY AFTER FINISHING USING ONE OF THE FOLLOWING METHODS:
    A. CONTINUOUSLY WATERED BURLAP
    B. WATERPROOF MEMBRANES
    C. SPRAYED-ON LIQUID MEMBRANE

    REFER TO THE MANUFACTURER'S SPECIFICATIONS FOR REQUIREMENTS. PROTECT THE CONCRETE SURFACE BETWEEN FINISHING OPERATIONS ON HOT, DRY DAYS OR ANY TIME PLASTIC SHRINKAGE CRACKS DEVELOP USING WET BURLAP, PLASTIC MEMBRANES OR FOGGING. PROTECT CONCRETE DECK AT ALL TIMES FROM RAIN, HAIL OR OTHER INJURIOUS EFFECTS.
22. PROVIDE POUR STOP MATERIAL WHERE NOT INDICATED ON PLAN AS REQUIRED TO COMPLETE JOB.
23. HOT WEATHER CONCRETING (ABOVE 90°F):
    WHEN PLACING CONCRETE IN HOT WEATHER CONDITIONS THAT COULD ADVERSELY AFFECT THE PROPERTIES AND SERVICEABILITY OF CONCRETE, PREPARATIONS AND PROCEDURES OUTLINED IN ACI 305R-91 SHOULD BE FOLLOWED UNLESS OTHERWISE NOTED IN CONSTRUCTION SPECIFICATIONS.
24. COLD WEATHER CONCRETING (BELOW 40°F):
    WHEN PLACING CONCRETE IN COLD WEATHER CONDITIONS THAT COULD ADVERSELY AFFECT THE PROPERTIES AND SERVICEABILITY OF CONCRETE, PREPARATIONS AND PROCEDURES OUTLINED IN ACI 306R-88 SHOULD BE FOLLOWED UNLESS OTHERWISE NOTED IN CONSTRUCTION SPECIFICATIONS.

## REBAR/SPLICING

1. PROVIDE TWO (2) #3 X 4'0" AT ALL RE-ENTRANT CORNERS, PLACED ON THE DIAGONAL WITH 1 1/2" CLEARANCE FROM THE CORNER AND TOP OF SLAB. REFER TO DETAIL.
2. SPLICES IN REINFORCING STEEL SHALL BE MADE ONLY AT THOSE LOCATIONS WHERE SPLICES ARE SHOWN ON THE STRUCTURAL DRAWINGS AND AT THOSE LOCATIONS WHERE SPLICES HAVE BEEN DETAILED ON THE REINFORCING STEEL PLACEMENT DRAWINGS THAT HAVE BEEN REVIEWED AND APPROVED BY THE ENGINEER OF RECORD. ALL SPLICES SHALL BE CLASS "B" TENSION LAP SPLICES (SEE TENSION DEVELOPMENT LENGTH TABLE IN TYPICAL CONCRETE DETAILS), EXCEPT WHERE INDICATED OTHERWISE ON THE STRUCTURAL DRAWINGS. MECHANICAL SPLICE COUPLERS CAPABLE OF DEVELOPING 125% OF THE YIELD STRENGTH OF THE REINFORCING STEEL MAY BE USED INSTEAD OF TENSION LAP SPLICES AT THE CONTRACTOR'S OPTION AT ANY LOCATION. COMPRESSION LAP SPLICES (SEE COMPRESSION DEVELOPMENT AND LAP SPLICE LENGTHS TABLE IN TYPICAL CONCRETE DETAILS) MAY BE USED ONLY AT THOSE LOCATIONS WHERE SUCH SPLICES ARE SPECIFICALLY INDICATED. STAGGER SPLICES WHERE REQUIRED TO PROVIDE 1 1/2" CLEAR SPACING BETWEEN REINFORCING STEEL AT SPLICE LOCATIONS.
3. WHEREVER POSSIBLE, SPLICES OF MILD STEEL SHALL BE MADE IN A COMPRESSION AREA. NO MORE THAN 50% OF BARS (ALTERNATED) SHALL BE SPLICED IN A TENSION AREA.
4. VERTICAL DOWELS PROJECTING OUT OF FOUNDATIONS INTO WALLS SHALL BE THE SAME SIZE AND SPACING AS THE VERTICAL REINFORCING STEEL IN THE WALL, U.N.O. AND SHALL BE INSTALLED FOR THE FULL DEPTH OF THE FOUNDATION AND TERMINATE WITH STANDARD 90 DEGREE HOOKS, U.N.O.; VERTICAL DOWELS PROJECTING OUT OF THE TOPS OF WALLS INTO SLABS SHALL BE THE SAME SIZE AND SPACING AS THE VERTICAL STEEL IN THE WALLS, U.N.O. AND SHALL EXTEND TO THE TOP OF THE SLAB AND TERMINATE WITH STANDARD 90 DEGREE HOOKS, U.N.O.; ALL DOWELS SHALL BE SPLICED WITH CLASS "B" TENSION LAP SPLICES TO THE VERTICAL REINFORCING STEEL IN THE WALLS.
5. ALL HOOKS IN REINFORCING STEEL SHALL BE STANDARD 90 DEGREE HOOKS, U.N.O.
6. ALL HOOKS ON #5 AND SMALLER TOP REINFORCING STEEL IN SLABS SHALL BE STANDARD 90 DEGREE STIRRUP HOOKS; A CONTINUOUS PERPENDICULAR TOP BAR (#4 MINIMUM) SHALL BE INSTALLED INSIDE THE CORNERS OF ALL HOOKED BARS.
7. VERTICAL REINFORCING STEEL IN CONCRETE AND MASONRY WALLS WITH ONE LAYER OF REINFORCING BARS SHALL BE INSTALLED IN THE CENTER OF THE WALL, U.N.O.

## PIPES/CONDUITS/SHOP DWGS

1. SLEEVES AND OPENINGS THROUGH CAST-IN-PLACE CONCRETE FRAMING ARE PROHIBITED EXCEPT WHERE THOSE SLEEVES AND OPENINGS ARE SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED REBAR PLACEMENT DRAWINGS. ALL SLEEVES AND OPENINGS SHALL BE INCLUDED WITHIN REBAR PLACEMENT (SHOP DRAWINGS) AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL.
2. CONTRACTOR SHALL SUBMIT A SINGLE DIMENSIONED AND COORDINATED DRAWING FOR EACH LEVEL SHOWING THE LOCATIONS OF THE FOLLOWING:
    - SLAB OPENINGS
    - SLEEVES (CAST IN PLACE & POST-INSTALLED FIELD CORED SLEEVES)
    - EMBEDDED PLATES AND ALL OTHER EMBEDS
    - SLAB EMBEDDED ELECTRICAL CABLE AND CONDUIT
3. SLEEVES, OPENINGS AND OTHER PENETRATIONS THROUGH CAST-IN-PLACE CONCRETE FRAMING SHALL BE CAST INTO THE CONCRETE; SAW CUTTING, CORING OR DRILLING OF SLEEVES OR OPENINGS THROUGH PREVIOUSLY CAST CONCRETE IS NOT PERMITTED EXCEPT WHERE SPECIFICALLY REVIEWED AND APPROVED BY THE ENGINEER OF RECORD.
4. REINFORCING STEEL IN EXISTING CONCRETE SHALL BE LOCATED PRIOR TO INSTALLATION OF NEW OPENINGS OR CORING OF HOLES IN THE CONCRETE. REINFORCING STEEL MAY NOT BE CUT WITHOUT APPROVAL FROM THE ENGINEER.
5. THE CONTRACTOR SHALL DELIVER TO THE ENGINEER, AT THE END OF THE JOB, ONE (1) ELECTRONIC VERSION OF THE FINAL FIELD COPIES OF ALL STEEL REINFORCING SHOP DRAWINGS
6. PIPES OR CONDUITS PLACED IN SLABS SHALL NOT HAVE AN OUTSIDE DIAMETER LARGER THAN 1/3 THE SLAB THICKNESS AND SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTER. ALUMINUM CONDUITS SHALL NOT BE PLACED IN CONCRETE. NO CONDUITS SHALL BE PLACED IN SLABS WITHIN 12 INCHES OF COLUMN FACE OR FACE OF BEARING WALL. NO CONDUITS MAY BE PLACED IN EXTERIOR SLABS OR SLABS SUBJECTED TO FLUIDS.
7. CONDUIT PLACED IN CONCRETE SLABS MUST BE PLACED IN ACCORDANCE WITH FOLLOWING GUIDELINES:
    - CONTRACTOR SHALL NOT INSTALL CONDUIT THAT IS NOT SHOWN ON MECHANICAL DRAWINGS.
    - DO NOT CROSS MORE THAN ONE LAYER OF CONDUIT OVER ANOTHER IN ANY GIVEN AREA.
    - PLACE CENTER OF CONDUIT OR CONDUIT GROUP AT THE MID-HEIGHT OF SLAB.
    - CONDUIT OR CONDUIT GROUP SHALL NOT EXTEND OUTSIDE THE MIDDLE 1/3" OF SLAB.
    - MAINTAIN A MINIMUM CLEAR SPACING BETWEEN THE CONDUIT OF 3" DIAMETER. THIS REQUIREMENT APPLIES EXCEPT WHERE CONDUITS ACCUMULATE AT "TURN DOWNS". THE CONDITIONS AT "TURN DOWN" LOCATIONS MUST BE EVALUATED AT EACH LOCATION BY THE ENGINEER OF RECORD. "TURN DOWNS" CANNOT OCCUR AT COLUMN LOCATIONS.
    - DO NOT PLACE ANY CONDUIT IN THE SLAB WITHIN 36" FROM THE EDGE OF ANY COLUMN OR WALL ABOVE OR BELOW THE SLAB.
    - SLAB REINFORCEMENT MUST NOT BE MOVED, CUT OR BENT TO ACCOMMODATE CONDUIT PLACEMENT.
    - CONDUIT SHALL NOT TO RUN THROUGH OR WITHIN COLUMN OR WALL.
    - ALUMINUM CONDUIT SHALL NOT BE EMBEDDED IN SLAB.

    ANY DEVIATIONS MUST BE SUBMITTED ON A SHOP DRAWING FOR APPROVAL BY THE ENGINEER OF RECORD PRIOR TO CONDUIT PLACEMENT.
8. ALL CONDUITS RUN HORIZONTALLY WITHIN STRUCTURAL CONCRETE SLAB CONSTRUCTION SHALL BE PLACED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
    - CONDUIT MUST BE LOCATED AT CENTERLINE OF SLAB AND SUPPORTED WITH CHAIRS TO KEEP CONDUIT AT MID-HEIGHT OF SLAB
    - NO CONDUIT WITHIN THE SHEAR CONE (36" AROUND COLUMNS)
    - NO CONDUITS LARGER THAN 2" OR ¼" THE SLAB THICKNESS, WHICHEVER IS LESS.
    - NO CROSSING OF CONDUIT
    - NO DISPLACEMENT OF TENDONS OR REBAR
    - NO METAL CONDUITS IN EXTERIOR SLABS
    - NO ALUMINUM CONDUITS
    - MINIMUM CENTER TO CENTER SPACING, IE 3 X DIA. OF CONDUIT
    - STACKING OF CONDUIT SHALL NOT BE PERMITTED
    - MAXIMUM OF (3) CONDUITS WITHIN A 6FT WIDTH OF SLAB

SUBCONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO E.O.R. FOR FINAL APPROVAL PRIOR TO INSTALLATION OF CONDUITS WITHIN SLAB.

## POST-INSTALLED ANCHORS

1. ALL POST INSTALLED ANCHORS SHALL BE HILTI UNLESS NOTED OTHERWISE ON PLAN.
2. ALL ALTERNATE FASTENER TYPE / MANUFACTURER SHALL BE SUBMIMTTED TO EOR FOR REVIEW / APPROVAL. SUBMITTALL SHALL INCLUDE DESIGN CALCULATIONS SIGNED & SEALED BY LICENSED PROFESSIONAL WITHIN PROJECT JURISDICTION.
3. POST-INSTALLED CONCRETE ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
4. POST INSTALLED ANCHORS SHALL BE INSTALLED IN MANNER THAT DOE SNOT DAMAGE REINFORCING STEEL WITH CAST-IN-PLACE CONCRETE. CONTRACTOR SHALL SCAN ALL AREAS WITH REINFORCEMENT PRIOR TO INSTALLATION TO MITIGATE DAMAGE OF REINFORCEMENT.
5. NOTIFY EOR IF AS-BUILT LOCATION OF ANCHORAGE IS LARGER THEN 1/2" FROM LOCATION AS DESIGNATED WITHIN CONTRACT DOCUMENTS.
6. MECHANICAL ANCHORS (WEDGE / UNDERCUT) SHALL BE ANY OF THE FOLLOWING:
7. CHEMICAL ANCHORS (EPOXY SET) SHALL BE ANY OF THE FOLLOWING:
8. UNLESS NOTED OTHER, ALL DRILL & EPOXY SHALL REBAR SHALL USE HILTI HIT-HY-200 ADHESIVE, AND INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. MINIMUM EMBEDMENT LENGTHS SHALL BE AS FOLLOWS:
9. ALL ANCHORS SHALL ASSUME CRACKED CONCRETE DESIGN CONDITION.
10. CONTRACTOR SHALL ARRANGE FOR HILTI REPRESENTATIVE TO PROVIDE ON SITE INSTALLATION TRAINING FOR EACH SPECIFIED ANCHOR TYPE, THE STRUCTURAL ENGINEERING OF RECORD SHALL RECEIVE DOCUMENATION VERIFY THAT ALL OF CONTRACTOR'S PERSONNEL INSTALLING ANCHORS HAVE BEEN TRAINED PRIOR TO COMMENCEMENT OF ANCHOR INSTALLATION.
11. CONCRETE SHALL HAVE ACHIEVED DESIGN STRENTH PRIOR TO INSTALLING POST-INSTALLED ANCHORS. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE THAT HAS CURED A MINIMUM OF 21 DAYS.
12. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ANCHORS AND PROXIMITY OF ANCHORS TO EDGES OF CONCRETE / MASONRY. INSTALL ANCHOR IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON DRAWINGS.
13. POST-INSTALLED ANCHORS SHALL BE INSTALLED IN MANNER THAT DOES NOT DAMAGE REINFORCING STEEL, REINFORCING STEEL SHALL BE LOCATED BY NON-DESTRUCTIVE MEANS PRIOR TO DRILLING HOLES. WHERE THE ANCHOR LAYOUT CANNOT AVOID INTERFERENCE WITH REINFORCEMENT STEEL, THE CONTRACTOR SHALL NOTIFY STRUCTURAL ENGINEER TO OBTAIN AN ALTERNATIVE ANCHOR LAYOUT.
14. ADHESIVE ANCHOR SHALL BE INSTALLED WITH A 6" EMBEDMENT DEPTH UNLESS NOTED OTHERWISE. ANCHORS OTHER THEN ADHESIVE ANCHORS SHALL BE INSTALLED WITH EMBEDMENT DEPTH EQUAL TO MAXIMUM EMBEDMENT DEPTH NOTED IN THE MANUFACTURER'S PRODUCT TECHNICAL GUIDE UNLESS NOTED OTHERWISE ON PLAN. WHERE EMBEDMENT DEPTH IS SPECIFIED, THAT DEPTH IS REQUIRED FINAL EFECTIVE MINIMUM EMBEDMENT DEPTH.
15. POST INSTALLED ANCHORS SHALL BE INSPECTED PERIODICALLY DURING INSTALLATION.
16. POST INSTALLED ANCHORS IN VERTICAL AND OVERHEAD INSTALLATION ORIENTATIONS SHALL BE CONTINUOUSLY INSPECTED DURING INSTALLATION.
17. INSPECTIONS SHALL BE PERFORMED BY SPECIAL INSPECTOR WHO HAS BEEN APPROVED BY LOCAL BUILDING OFFICIAL. THE INSPECTOR SHALL VERIFY THAT ALL ANCHORS WERE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS, THE APPLICABLE ICC ESR REPORTS AND THE MANUFACTURER'S INSTALLATION MANUAL. INSPECTIONS SHALL INCLUDE VERIFICATION OF ANCHOR SPACING, EMBEDMENT AND EDGE DISTANCE REQUIREMENTS.

### POST INSTALLED ANCHORS SCHEDULE

| INSTALLATION TYPE | HILTI ANCHOR SELECTION |
|---|---|
| CONCRETE EXPANSION ANCHOR | KWIK BOLT TZ |
| CONCRETE ADHESIVE ANCHOR | HIT-HY 200 SAFE SET W/ HIT-Z ROD<br>HIT-HY 200 W/ HOLLOW DRILL BIT W/ HAS-E ROD<br>HIT-RE 500 SD W/ HAS-E ROD |
| CONCRETE SCREW ANCHOR | KWICK HUS EZ |
| CONCRETE DOWEL REINFORCEMENT | HIT-HY 200 SAFE SET W/ HOLLOW DRILL BIT<br>HIT-RE 500 SD |
| CMU - GROUT FILLED EXPANSION ANCHOR | KWIK BOLT 3 |
| CMU - GROUT FILLED SCREW ANCHOR | KWIK HUS EZ |
| CMU - GROUT FILLED ADHESIVE ANCHOR | HIT-HY 70 W/ HAS-E ROD |
| CMU - HOLLOW BLOCK ADHESIVE ANCHOR | HIT-HY 70 W/ HAS-E ROD & SCREEN TUBE |

## MASONRY NOTES

1. ALL MASONRY DESIGN & CONSTRUCTION, REINFORCED AND UNREINFORCED, SHALL COMPLY WITH THE REQUIREMENTS OF THE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", (TMS 402), AND THE "SPECIFICATION FOR MASONRY STRUCTURES," (TMS 602).
2. MASONRY UNITS SHALL BE MEDIUM WEIGHT HOLLOW CONCRETE UNITS CONFORMING TO THE REQUIREMENTS OF ASTM C90. CONCRETE MASONRY UNITS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2800PSI TO OBTAIN A MASONRY NET AREA COMPRESSIVE STRENGTH (F'm) OF 2000PSI AT 28 DAYS. UNITS SHALL NOT BE INSTALLED PRIOR TO ATTAINING THE REQUIRED 28 DAY STRENGTH.
3. MORTAR SHALL CONFORM TO ASTM C270, TYPE M OR S. ALL PORTLAND CEMENT SHALL CONFORM TO ASTM C150, TYPE I. LIME SHALL CONFORM TO ASTM C207 AND MASONRY CEMENT SHALL CONFORM TO ASTM C91.
4. GROUT SHALL CONFORM TO ASTM C476 AND SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI. SLUMP OF GROUT SHALL BE 8 TO 10 INCHES AND THE MAXIMUM AGGREGATE SIZE SHALL BE 3/8" (AGGREGATE GRADED TO PRODUCE FINE GROUT IN CONFORMANCE WITH ASTM C476 AND C404).
5. HORIZONTAL JOINT REINFORCING: ASTM A82; 9-GAGE TRUSS-TYPE, GALVANIZED.
6. DEFORMED BAR REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 AND SHALL BE FULL HEIGHT OF WALLS UNLESS OTHERWISE NOTED. PROVIDE BAR SPACERS AND POSITIONERS AS REQUIRED TO PROPERLY LOCATE AND STABILIZE REINFORCING DURING GROUTING OPERATIONS. GROUT ALL REINFORCED CELLS SOLID WITH GROUT.
7. SPLICES OF REINFORCING STEEL SHALL BE MADE ONLY AT THOSE LOCATIONS WHERE SPLICES ARE SHOWN ON THE STRUCTURAL DRAWINGS AND AT THOSE LOCATIONS WHERE SPLICES HAVE BEEN DETAILED ON THE REINFORCING STEEL PLACEMENT DRAWINGS THAT HAVE BEEN REVIEWED AND APPROVED BY THE ENGINEER OF RECORD.
8. PROVIDE VERTICAL MASONRY CONTROL JOINTS AT MAXIMUM 25'-0" ON CENTER UNLESS DETAILED ON ARCHITECTURAL DRAWINGS, COORDINATE LOCATIONS WITH ARCHITECT.
9. BOND BEAMS SHALL BE PROVIDED AT THE TOPS OF ALL CMU WALLS AND AT HORIZONTAL INTERVALS NOT TO EXCEED 10FT O.C. VERTICALLY. UNLESS INDICATED ON DRAWINGS,
10. VERTICAL CONTROL JOINTS SHALL BE PLACED SUCH THAT THE RATIO OF JOINT SPACING (L) DIVIDED BY WALL HEIGHT (H) DOES NOT EXCEED 3.0. IN NO CASE SHALL SPACING EXCEED 50 FT. CONTROL JOINTS SHALL BE CONSTRUCTED USING SASH BLOCKS AND DUR-O-WAL PREFORMED REGUUR RAPID CONTROL JOINT (OR EQUAL OF EXTRUDED RUBBER.) WALL REINFORCING SHALL BE DISCONTINUOUS AT JOINTS. VERTICAL JOINTS SHALL BE LOCATED AS FOLLOWS:
    A. CHANGES IN WALL HEIGHT OR THICKNESS.
    B. AT CONSTRUCTION/BUILDING EXPANSION JOINTS IN FOUNDATION, IN ROOF, AND IN FLOORS.
11. CONCRETE MASONRY UNITS SHALL BE LAID IN RUNNING BOND UNLESS INDICATED BY THE ARCHITECTURAL DRAWINGS. PROVIDE FULL BED AND HEAD JOINTS.
12. INSTALL FLASHING AT ALL CONDITIONS SUCH AS LINTELS AND SHELF ANGLES, WHERE THE DOWNWARD FLOW OF WATER WITHIN THE MASONRY WILL BE INTERRUPTED.
13. HOLLOW CONCRETE UNITS BELOW GRADE SHALL BE HAVE ALL CELLS GROUTED SOLID.
14. REINFORCE ALL BOND BEAMS WITH A MINIMUM 2 CONTINUOUS #5 BARS WITH MINIMUM 3000 PSI SMALL AGGREGATE CONCRETE (NOTE: MORTAR MIX DOES NOT CONSTITUTE GROUT). PROVIDE WALL ANCHORS TO ALL BUILDING COLUMNS AT MAXIMUM 48" VERTICAL AND AT ALL BOND BEAMS.
15. BOND BEAM UNITS SHALL BE OPEN CELL UNITS THAT PERMIT VERTICAL REINFORCING TO PASS THROUGH. WHERE BOND BEAMS COURSES STEP DUE TO SLOPING CONDITIONS, LAP REINFORCING A MINIMUM OF 4 FEET. PROVIDE MINIMUM BOND BEAM REINFORCING AS FOLLOWS, UNLESS NOTED OTHERWISE:
    A. EXTERIOR WALLS: (2) #4 x CONT. BELOW EACH FRAMING LEVEL.
    B. PARAPETS: (2) #4 x CONT. BELOW EACH FRAMING LEVEL.
    C. INTERIOR BEARING WALLS: (1) #5 x CONT. BELOW EACH FRAMING LEVEL.
    D. INTERIOR NON-LOAD BEARING WALLS: (2) #4 x CONT. BELOW EACH FRAMING LEVEL.
17. PROVIDE AND INSTALL TEMPORARY BRACING REQUIRED INSURING STABILITY OF ALL WALLS DURING CONSTRUCTION AND UNTIL ERECTION OF ATTACHED STRUCTURAL FRAMING IS COMPLETED.
18. PROVIDE GALVANIZED HORIZONTAL JOINT REINFORCEMENT IN ALL WALLS AND PARTITIONS AT 16" O.C. UNLESS OTHERWISE SHOWN OR NOTED. PROVIDE ONE (1) PIECE PREFABRICATED UNITS AT 8" O.C. AT ALL WALL CORNERS AND INTERSECTIONS.
19. ALL MORTAR JOINTS ON EXPOSED WALLS SHALL BE STRUCK TO PRODUCE A DENSE, SLIGHTLY CONCAVE SURFACE WELL BONDED TO THE SURFACE OF THE MASONRY UNIT.
20. REINFORCEMENT SHALL BE PLACED ACCURATELY AND SECURED AT INTERVALS NOT TO EXCEED 72 INCHES. MINIMUM SPACING BETWEEN BARS OR MASONRY SURFACES SHALL BE ONE BAR DIAMETER. LAPPED SPLICES SHALL BE A MINIMUM OF 48 BAR DIAMETERS. PROVIDE LAP-JOINT TIE FOR EACH SPLICE.
21. ALLOW GROUT IN REINFORCED CMU WALLS TO CURE A MINIMUM OF 48 HOURS BEFORE IMPOSING CONCENTRATED OR OTHER LOADS FROM ABOVE.
22. PROVIDE MASONRY ANCHORS AT 16" O.C. SET ON COURSING AND ATTACHED TO ALL BEAMS, COLUMNS, PARTITIONS, AND WALLS ABUTTING OR EMBEDDED IN MASONRY UNLESS NOTED OTHERWISE ON ARCHITECTURAL AND STRUCTURAL DRAWINGS.
23. NO AIR-ENTRAINING ADMIXTURES OR ANTIFREEZE COMPOUNDS, SUCH AS CALCIUM CHLORIDE SHALL BE ADDED TO MORTAR.
24. ALL WALLS OR PILASTERS SUPPORTING STEEL AT BEARING PUTES SHALL BE GROUTED SOLID FOR FOUR COURSES IN DEPTH FOR A WIDTH OF 32".
25. DO NOT BACKFILL AGAINST FOUNDATION WALLS UNTIL MORTAR HAS ATTAINED MAXIMUM STRENGTH. WHERE BACKFILL IS PLACED AGAINST FOUNDATION WALLS BEFORE FLOOR CONSTRUCTION IS IN PLACE, PROVIDE TEMPORARY BRACING.
26. ALL MASONRY PIERS AND PARTITIONS SHALL BE TOOTHED TO ADJACENT MASONRY WALLS. PROVIDE TIES TO ADJACENT FLOOR AND ROOF CONSTRUCTION IN ACCORDANCE WITH DETAILS ON DRAWINGS.
27. THE CONTRACTOR SHALL VERIFY ALL OPENINGS BELOW LINTELS INDICATED ARE ADEQUATE TO ACCEPT DOORFRAMES, LOUVERS, ETC. AS SHOWN ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS. NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF ANY DISCREPANCIES PRIOR TO LINTEL INSTALLATION.
28. PROVIDE ANCHORAGE TO ADJACENT STRUCTURAL STEEL FRAMING AT EACH FLOOR LEVEL AND ALONG EACH COLUMN. PROVIDE HOHMANN 4 BARNARD #359 AND VBT WALL TIES AT A MAXIMUM OF 24 INCHES ON CENTER HORIZONTALLY AND VERTICALLY.
29. CAVITIES CONTAINING REINFORCING OR BELOW BEARING PLATES SHALL BE GROUTED BY MEANS OF LOW-LIFT TECHNIQUES. HIGH-LIFT GROUTING MAY BE USED ONLY WITH PRIOR APPROVAL. FOLLOW ACI SPECIFICATIONS FOR MASONRY GROUTING.
30. ALL MASONRY WALLS SHALL BE ADEQUATELY BRACED DURING CONSTRUCTION TO RESIST WIND LOADS OF 25 PSF. NOTE THAT FLOOR AND ROOF DIAPHRAGMS WILL PROVIDE ULTIMATE STABILITY FOR WALLS. MASONRY WALLS SHALL NOT BE BUILT HIGHER THAN 10 TIMES THEIR THICKNESS WITHOUT BRACING.
31. ALL WALL SECTIONS AND PIERS LESS THAN TWO SQUARE FEET IN CROSS-SECTIONAL AREA SHALL BE FULLY GROUTED.
32. IMPLEMENT COLD WEATHER CONSTRUCTION PROCEDURES IN ACCORDANCE WITH TMS 402 WHEN AMBIENT TEMPERATURE FALLS BELOW 40 DEGREES F OR THE TEMPERATURE OF MASONRY UNITS IS BELOW 40 DEGREES F. WET OR FROZEN UNITS SHALL NOT BE LAID. THE TEMPERATURE OF THE NEWLY LAID MASONRY OR NEWLY GROUTED MASONRY SHALL BE MAINTAINED ABOVE 32 DEGREES F FOR A MINIMUM OF 24 HOURS USING THE METHODS DESCRIBED IN TMS 402.
33. IMPLEMENT HOT WEATHER CONSTRUCTION PROCEDURES IN ACCORDANCE WITH TMS 402 WHEN AMBIENT TEMPERATURE EXCEEDS 100°F, OR EXCEEDS 90°F WITH A WIND VELOCITY GREATER THAN 8 MPH.
34. GROUT PLACEMENT SHALL NOT START UNTIL THE PLACEMENT OF REINFORCING HAS BEEN APPROVED BY THE INSPECTION AGENCY.
35. SUBMIT PUBLISHED DATA FROM MANUFACTURERS OF PRODUCTS AND ACCESSORIES SPECIFIED, INDICATING COMPLIANCE WITH REQUIREMENTS.
36. PROVIDE MIX DESIGN AND TEST REPORTS FOR PRE-BLENDED MORTAR AND CONVENTIONAL GROUT INDICATING TYPES AND PROPORTIONS OF MATERIALS.
37. THE OWNER WILL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS AND INSPECTIONS AND PREPARE TEST REPORTS.
38. THE TESTING AND INSPECTION AGENCY SHALL MONITOR THE PROPORTIONING, MIXING, AND CONSISTENCY OF MORTAR AND GROUT; THE PLACEMENT OF MORTAR, GROUT, AND MASONRY UNITS; AND THE PLACEMENT OF REINFORCING STEEL FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.
39. CONFORM TO EARTHQUAKE REQUIREMENTS OF TMS 402, SPECIFICALLY APPENDIX A - SPECIAL PROVISIONS FOR SEISMIC DESIGN AS FOLLOWS: A.3 - SPECIAL PROVISIONS FOR SEISMIC PERFORMANCE CATEGORY C AS FOLLOWS:
    A. MASONRY WALLS SHALL BE ANCHORED TO ALL FLOORS AND ROOFS WHICH PROVIDE LATERAL SUPPORT FOR THE WALLS. SUCH AN ANCHORAGE SHALL PROVIDE DIRECT CONNECTION CAPABLE OF RESISTING HORIZONTAL FORCES REQUIRED OR A MINIMUM OF 200 LB PER LINEAL FOOT OF WALL, WHICHEVER IS GREATER. WALLS SHALL RESIST BENDING BETWEEN ANCHORS WHERE ANCHOR SPACING EXCEEDS 4 FT. ANCHORS IN MASONRY WALLS SHALL BE EMBEDDED IN REINFORCED BOND BEAMS OR REINFORCED VERTICAL CELLS.
    B. VERTICAL REINFORCEMENT OF AT LEAST 0.20 SQUARE INCHES ((1) #4 REBAR) IN CROSS-SECTIONAL AREA SHALL BE PROVIDED CONTINUOUSLY FROM SUPPORT TO SUPPORT AT EACH CORNER, AT EACH SIDE OF EACH OPENING AND AT THE END OF WALLS. HORIZONTAL REINFORCEMENT NOT LESS THAN 0.2 SQUARE INCHES ((1) #4 REBAR) IN CROSS SECTION AREA SHALL BE PROVIDED: (1) AT THE BOTTOM AND TOP OF WALL OPENINGS AND SHALL EXTEND NOT LESS THAN 24 IN. NOR LESS THAN 40 BAR DIAMETERS PAST THE OPENING, (2) CONTINUOUSLY AT STRUCTURALLY CONNECTED ROOF AND FLOOR LEVELS AND AT THE TOP OF WALLS, (3) AT THE BOTTOM OF THE WALL OR IN THE TOP OF THE FOUNDATIONS WHEN DOWELED TO THE WALL, (4) AT MAXIMUM SPACING OF 10 FT UNLESS UNIFORMLY DISTRIBUTED JOINT REINFORCEMENT IS PROVIDED.


JT ENGINEERING
Building Solutions
1321 Brunswick Ave, Lawrence, NJ 08648 | 161 Washington Street, 13th Floor, Suite 1375 Conshohocken, PA 19428
P: 609.303.0236
F: 609.303.0237
www.jt-pe.com

JASON C. TARANTINO
Jason Tarantino — Digitally signed by Jason Tarantino Date: 2023.12.26 17:18:14 -05'00'
FLORIDA LICENSE: PE 94381


ISSUED FOR PERMIT

REVISIONS:

| Mk | DATE: | REMARKS |
|---|---|---|
| 1 | 12/08/23 | ISSUED FOR PERMIT |

PROJECT:
Proposed Building
Okeechobee (Shul)
FL-78 & Access Road
Okeechobee, Florida, 34978


ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE ORIGINAL AND UNPUBLISHED WORK OF THE ENGINEER. THE REPRODUCTION OF THIS DRAWING FOR THE PURPOSE OF COPYING THIS WORK OR REVISING SAID DRAWING SHALL BE CONSIDERED A VIOLATION OF BOTH THE PROFESSIONAL CODE OF ETHICS AND A THEFT OF COMPANY ASSETS, BOTH OF WHICH SHALL BE PROSECUTED TO THE FULLEST EXTENT OF CURRENT STATUTES.


DRAWING TITLE:
STRUCTURAL SPECIFICATIONS

DRAFTED BY: NAR
REVIEWED BY: JCT
PROJECT NUMBER: 2318_05
DRAWING SCALE: AS NOTED
DRAWING NUMBER: S003

© JT ENGINEERING