

FOR CONSTRUCTION

DOCUMENT HISTORY

Table with 4 columns: No., Description, Date, and By. Contains one entry for 'AS BUILT' dated 05/08/2026 by C. Altinok.

REVISIONS

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MECHANICAL ANCHORS:

- FOR POST-INSTALLED MECHANICAL ANCHORS INTO CRACKED CONCRETE... PRODUCTS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH AC308.5 AND ICC-ES AC108. INSTALLATION SHALL COMPLY WITH MANUFACTURER'S LATEST ICC-ES APPROVAL... PRE-APPROVED ANCHORS INCLUDE: A. SIMPSON STRONG-TIE STRONG-BOLT 2... B. SIMPSON STRONG-TIE TITEN HD... C. HILTI KWIK BOLT 2... D. HILTI KWIK KHZ 2... E. DEWALT STUD-SD1... F. DEWALT SCREW-BOLT+.

ADHESIVE ANCHORS:

- FOR POST-INSTALLED ADHESIVE ANCHORS INTO CRACKED CONCRETE... PRODUCTS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH AC308.5 AND ICC-ES AC308. INSTALLATION SHALL COMPLY WITH MANUFACTURER'S LATEST ICC-ES APPROVAL... PRE-APPROVED ADHESIVES INCLUDE: A. SIMPSON STRONG-TIE SET-3G... B. HILTI HIT-RE 200 V3 SLOW CURE A (APPROVED FOR DYNAMIC LOADING)... C. DEWALT AC108-GOLD... D. HILTI HIT-HY 270... E. DEWALT AC108-GOLD.

DESIGN STANDARDS:

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE BUILDING CODE AND PUBLICATIONS LISTED BELOW IN THE CASE OF CONFLICTING REQUIREMENTS, THE BUILDING CODE SHALL GOVERN. APPLICABLE CODES AND STANDARDS: BUILDING CODE: INTERNATIONAL BUILDING CODE 2021 (IBC), INCLUDING BUILDING CODE AMENDMENTS SPECIFIC TO THE PROJECT SITE JURISDICTION.

CONCRETE:

- ALL CONCRETE WORK SHALL COMPLY WITH THE LATEST ADOPTED PROVISIONS OF ACI 318, AND ACI 301 AND THE APPLICABLE CODES AND STANDARDS REFERENCED IN THE DESIGN STANDARDS. CONCRETE SHALL BE NORMAL WEIGHT CONCRETE EXCEPT AS NOTED. ALL CONCRETE STRENGTHS (AT 28 DAYS) SHALL BE AS FOLLOWS: SEE CONCRETE MIX TABLE. CALCIUM CHLORIDE SHALL NOT BE USED IN ANY FORM. CONCRETE PROTECTION FOR REINFORCING (U.N.O.): STRUCTURAL ELEMENT CLEAR COVER FOOTINGS, (CAST AGAINST & PERMANENTLY EXPOSED TO EARTH) 3 INCHES FOOTINGS AND WALLS (CAST-IN-FORMS) PERMANENTLY EXPOSED TO EARTH) 2 INCHES SLABS (IN CONTACT WITH EARTH) 2 INCHES SLABS (EXPOSED TO WEATHER) 1 1/2 INCHES SLABS ABOVE GROUND 3/4 INCHES PEDESTALS (TO TIES) 2 INCHES BEAMS (TO STIRRUPS) 1 1/2 INCHES COLUMNS ABOVE GRADE (TO TIES) 1 1/2 INCHES ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064 AND SHALL BE LAPPED ONE FULL MESH PANEL PLUS 2 INCHES AT SIDES AND ENDS AND WIRED TOGETHER. ALL REINFORCING STEEL SHALL BE PLACED WITHIN TOLERANCES SPECIFIED IN ACI 318. DEFORMED REBAR (TYP UNO): FY = 60 KSI (A615, GRADE 60) WELDABLE DEFORMED REBAR (WHERE INDICATED): FY = 60 KSI (A706, GRADE 60) REINFORCING LAP SPlice TABLE: SEE SHEET S-004. FOR NON-CONTACT SPLICES, THE CENTER TO CENTER SPACING OF SPLICED BARS SHALL NOT EXCEED THE LESSER OF ONE-FIFTH THE REQUIRED LAP SPlice LENGTH AND 6 INCHES. IT IS PERMITTED TO SUBSTITUTE MECHANICAL SPLICES (MEETING THE REQUIREMENTS OF SECTION 25.5.7 IN ACI 318) FOR LAP SPLICES AT NO ADDITIONAL COST. MECHANICAL SPLICES SHALL DEVELOP 125% (MIN) OF THE YIELD STRENGTH OF THE REBAR IN TENSION OR COMPRESSION. ALL REINFORCEMENT SHALL BE BENT COLD. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. HOOKS SHALL BE ACI STANDARD HOOKS IN ACCORDANCE WITH CHAPTER IN ACI 318. SEE TABLES ON SHEET S-004. REINFORCING FOR CONTINUOUS FOUNDATIONS SHALL BE CONTINUOUS AT CORNERS AND INTERSECTIONS. PROVIDE CORNER LAP BARS AT ALL CORNERS AND INTERSECTIONS. SEE TYPICAL CORNER REINFORCING DETAIL ON DRAWINGS. WHERE CONTINUOUS FOUNDATIONS INTERSECT COLUMN FOUNDATIONS, REBAR FROM CONTINUOUS FOUNDATION SHALL BE CONTINUOUS THROUGH 6'-0" AND SMALLER COLUMN FOUNDATIONS, AND SHALL EITHER BE CONTINUOUS THROUGH OR EXTEND A MINIMUM OF 2'-6" (BUT NOT LESS THAN THE STRAIGHT BAR DEVELOPMENT LENGTH) INTO COLUMN FOUNDATIONS LARGER THAN 6" WIDE. AT THE TIME CONCRETE IS PLACED, REINFORCEMENT SHALL BE FREE FROM MUd, OIL OR OTHER NONMETALLIC COATINGS THAT DECREASE BOND. CHAMFER EXPOSED CORNERS OF CONCRETE CONSTRUCTION WITH STANDARD 3/4" CHAMFERS, UNO. WHERE STRIP WATER STOP IS INDICATED ON DRAWINGS, WATERSTOP-RX (R-10) BY CETCO, SWELLSSTOP (3/4" x 1" BY GREENSTREAK, SF312-SYNKOFLEX WATER STOP BY HENRY COMPANY OR APPROVED EQUIV. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

CONCRETE MIX TABLE:

Table with columns: CONC MIX TYPE, INTENDED USE, EXPOSURE CATEGORIES AND CLASSES, COMPRESSIVE STRENGTH (PSI), TEST AVG (DAYS), CONC WEIGHT, MAX W/C RATIO, MAX AGGREGATE SIZE (IN), TOTAL AIR CONTENT (%), OTHER REQS. Rows include FOOTINGS, LAUNCH PAD, L/M RUNWAY, SOUTH R/W SLAB, INTERIOR SLABS-ON-GRADE, ALL CONC EXPOSED TO WEATHER OR DEICERS: WALLS, CURBS, TRENCH WALLS AND TRENCH SLABS, ALL CONCRETE OTHERWISE NOT SPECIFIED.

CONCRETE MIX TABLE ABBREVIATIONS:

- F# = FREEZING AND THAWING CLASS S# = SULFATE CLASS W# = IN CONTACT WITH WATER CLASS CR = CORROSION PROTECTION OF REINFORCEMENT CLASS LWC = LIGHTWEIGHT CONCRETE MSS = MAXIMUM SHRINKAGE STRAIN LIMITED NWC = NORMAL WEIGHT CONCRETE

CONCRETE MIX NOTES:

- AGGREGATE SIZE NOT TO EXCEED 1/5 OF NARROWEST DIMENSION BETWEEN FORMS, 1/3 OF SLAB DEPTH, OR 3/4 OF MINIMUM CLEAR SPACING BETWEEN REINFORCEMENT. CONCRETE MIXES FOR SLAB ON GROUND CONSTRUCTION SHALL COMPLY WITH ACI 302.1R-15, SECTION 8.9 REGARDING AGGREGATE GRADATIONS.

LIMITS ON CEMENTITIOUS MATERIALS

Table with columns: CEMENTITIOUS MATERIALS, MAXIMUM % OF TOTAL CEMENTITIOUS MATERIAL BY MASS. Rows include FLY ASH OR OTHER POZZOLANS CONFORMING TO ASTM D618, SLAG CEMENT CONFORMING TO ASTM C989, SILICA FUME CONFORMING TO ASTM C1240, TOTAL OF FLY ASH OR OTHER POZZOLANS AND SILICA FUME, TOTAL OF FLY ASH OR OTHER POZZOLANS, SLAG CEMENT, AND SILICA FUME.

AIR ENTRAINMENT NOTES:

REQUIRED ONLY WHERE CONCRETE WILL BE EXPOSED TO ENVIRONMENTAL CONDITIONS FOR EXPOSURE CLASS F1, F2, OR F3 (PER ACI 318) AND HARD TROWEL FINISH IS NOT SPECIFIED. UNLESS OTHERWISE SPECIFIED BY ARCHITECT OR ENGINEER, THE PROPER AIR ENTRAINMENT RATE IS PER THE TABLE ABOVE, COMPLIMENTED WITH THE FOLLOWING INFORMATION WITH A TOLERANCE ON THE AS-DELIVERED CONCRETE OF ± 1.5 PERCENT. THE PROPER AIR ENTRAINMENT RATE IS DEPENDENT ON THE EXPOSURE CONDITION AND THE SIZE OF THE COARSE AGGREGATE EXPRESSED AS THE MAXIMUM NOMINAL AGGREGATE SIZE (ACI 318-14 TABLE 19.3.2.1)

EXPOSURE CLASS F1 - WHERE THE CONCRETE IN A COLD CLIMATE WILL BY ONLY OCCASIONALLY EXPOSED TO MOISTURE PRIOR TO FREEZING AND WHERE NO DEICING SALTS ARE USED. A. 1-1/2" OR 1" NOMINAL MAXIMUM AGGREGATE SIZE: 4.5 PERCENT B. 3/4" NOMINAL MAXIMUM AGGREGATE SIZE: 5 PERCENT C. 1/2" NOMINAL MAXIMUM AGGREGATE SIZE: 5.5 PERCENT D. 3/8" NOMINAL MAXIMUM AGGREGATE SIZE: 6 PERCENT

EXPOSURE CLASS F2 & F3 - WHERE THE CONCRETE IN A COLD CLIMATE MAY BE IN ALMOST CONTINUOUS CONTACT WITH MOISTURE PRIOR TO FREEZING AND WHERE DEICING SALTS ARE USED. A. 1-1/2" NOMINAL MAXIMUM AGGREGATE SIZE: 5.5 PERCENT B. 3/4" OR 1" NOMINAL MAXIMUM AGGREGATE SIZE: 6 PERCENT C. 1/2" NOMINAL MAXIMUM AGGREGATE SIZE: 7 PERCENT D. 3/8" NOMINAL MAXIMUM AGGREGATE SIZE: 7.5 PERCENT

DELEGATED DESIGNS:

- UNLESS SPECIFICALLY DETAILED ON DRAWINGS, THE FOLLOWING SHALL BE DESIGNED BY THE CONTRACTOR'S DELEGATED DESIGN ENGINEER. SHOP DRAWINGS AND CALCULATIONS FOR COMPLETE DESIGN SHALL BE PREPARED AND SUBMITTED TOGETHER FOR REVIEW BY THE ENGINEER OF RECORD AND BY THE OWNER. CALCULATIONS AND DETAILS SHALL BE SIGNED AND SEALED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE WHICH THE STRUCTURE RESIDES. BEFORE SUBMITTING TO THE ENGINEER OF RECORD, SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR FOR COMPLETENESS AND COMPLIANCE TO THE CONTRACT DOCUMENTS. SHOP DRAWINGS NOT REVIEWED BY THE CONTRACTOR WILL BE REJECTED AND RETURNED. NO FABRICATION SHALL BEGIN UNTIL THE REVIEW PROCESS OF THE SHOP DRAWINGS BY THE ENGINEER OF RECORD IS COMPLETED, APPROVED, AND RETURNED TO THE CONTRACTOR. DELEGATED DESIGN ITEMS: A. WOOD LIGHT POLES

FOUNDATIONS AND SLABS ON GROUND:

- FOUNDATIONS ARE DESIGNED FOR MAXIMUM ALLOWABLE SOIL BEARING CAPACITY OF 2,500 PSF BASED ON INFORMATION AND RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT PREPARED BY SHANNON AND WILSON, DATED 5/20/2025. THIS VALUE SHALL BE VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER (OR HIS REPRESENTATIVE) PRIOR TO PLACEMENT OF CONCRETE FOR FOOTINGS. SUBGRADE FOR ALL NEW FOUNDATIONS SHALL BE PREPARED AND COMPACTED IN ACCORDANCE WITH RECOMMENDATIONS STATED IN THE GEOTECHNICAL REPORT MENTIONED ABOVE. REFER TO GEOTECH REPORT FOR DETAILS ON LOOSE SOIL REMOVAL, COMPACTION RECOMMENDATIONS, AND STRUCTURAL FILL REQUIREMENTS. WHERE EARTH FORMING IS USED, EXCAVATION FOR FOUNDATIONS SHOWN ON DRAWINGS SHALL NOT BE LESS THAN INDICATED FOUNDATION SIZE, NOR LARGER THAN THE INDICATED FOUNDATION SIZE BY MORE THAN 3" IN EACH DIRECTION. THE FOLLOWING LATERAL EQUIVALENT FLUID PRESSURES WERE USED FOR RETAINING STRUCTURES BASED ON TYPICAL VALUES FOR GRAVEL BACK-FILLED WALLS. ACTIVE CONDITION: AT REST CONDITION: PASSIVE CONDITION: 35 PCF: 55 PCF: 225 PCF. SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR EXTERIOR CONCRETE SLAB LAYOUTS, CONTROL JOINTS, AND ELEVATIONS. PROVIDE THICKENED EDGE IN SLAB ON GROUND AT ALL EXTERIOR BUILDING DOORS AND AT EXTERIOR SLAB EDGES. EXCAVATIONS FOR SPREAD FOOTINGS, COMBINED FOOTINGS, CONTINUOUS FOOTINGS AND/OR MAT FOUNDATIONS SHALL BE CLEANED AND HAND TAMPEDED TO A UNIFORM SURFACE. FOOTING EXCAVATIONS SHALL HAVE THE SIDES AND BOTTOMS TEMPORARILY LINED WITH 5 MIL VISQUEEN IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HOURS OF THE EXCAVATION OF THE FOOTING. FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION, WHICH DIFFER FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT SHALL BE REPORTED TO BRPH AND THE GEOTECHNICAL ENGINEER BEFORE CONSTRUCTION IS CONTINUED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AS WELL AS ALL APPROPRIATE AGENCIES AND MUNICIPALITIES TO AVOID DAMAGE TO UNDERGROUND UTILITIES PRIOR TO THE START OF ANY SITE WORK. THE CONTRACTOR SHALL PROVIDE CONTINUOUS CONTROL OF THE SURFACE AND SUBSURFACE WATER DURING CONSTRUCTION SUCH THAT FOUNDATION WORK IS DONE IN THE DRY AND ON UNDISTURBED SUBGRADE MATERIAL AS APPLICABLE. REINFORCEMENT PLACEMENT SEQUENCE FOR FOOTINGS IS NOTED ONLY FOR MAJOR REINFORCEMENT BAR LAYERS. IN SPREAD FOOTINGS AND MATS THE CONTRACTOR SHALL SEQUENCE ALL OTHER BAR PLACEMENTS AS REQUIRED TO CONFORM TO THE CONTRACT DOCUMENTS. DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF WALLS WHICH ARE ULTIMATELY SUPPORTED TOP AND BOTTOM. SUCH SHORING SHALL NOT BE REMOVED UNTIL THE SUPPORTING ELEMENTS ARE IN PLACE, THE CONCRETE IN THE WALLS AND SUPPORTING ELEMENTS HAS ATTAINED THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH (FS) AND COMPACTION OF THE BACKFILL AGAINST THE WALL HAS BEEN COMPLETED. THE FLOOR SUBGRADE SHALL BE PROPERLY COMPACTED AND PROOF-ROLLED AND SHALL BE FREE OF STANDING WATER, MUd AND FROZEN SOIL. SLABS ON GROUND CONTROL JOINTS SHALL BE MADE USING A "SOFT-CUT" CONCRETE SAW AS SOON AS THE SLAB WILL SUPPORT THE WEIGHT OF THE SAW AND OPERATOR WITHOUT DISTURBING THE FINAL FINISH. THE CRACK CONTROL JOINTS SHALL BE CUT A MAXIMUM WIDTH OF 1/8 INCH AND A MINIMUM DEPTH OF 1/4 THE SLAB THICKNESS. REFER TO THE DRAWINGS FOR INFORMATION ON CONTROL JOINTS, CONSTRUCTION JOINTS, REINFORCEMENT DETAILS AND JOINT SEALANT DETAILS. WHERE THE SLAB IS TO RECEIVE SENSITIVE ARCHITECTURAL FLOOR FINISHES, ALL JOINTS IN THE SLAB CONSTRUCTION SHALL BE PLACED TO ALIGN WITH JOINTS IN THE FLOOR FINISHES.

STRUCTURAL STEEL:

- DESIGN, FABRICATION AND ERECTION OF ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE AISC STEEL CONSTRUCTION MANUAL. PROVIDE 3" MINIMUM CONCRETE COVER AROUND STEEL BELOW GRADE OR COAT WITH ASPHALTIC OR BITUMASTIC PAINT. ALL GROUT FOR USE UNDER BEARING PLATES, LEVELING PLATES, ETC. SHALL BE PRE-MIXED, NON-SHRINK, NON-METALLIC CONFORMING TO ASTM C827. THE GROUT STRENGTH SHALL BE THE GREATER OF 8,000 PSI OR TWICE THE STRENGTH OF THE SUPPORTING CONCRETE. ALL STRUCTURAL STEEL SHALL HAVE THE FOLLOWING ASTM SPECIFICATION AND YIELD STRENGTHS UNO: ANGLES: FY = 36 KSI (A36) ALL OTHER SHAPES (U.N.O.): FY = 36 KSI (A36) PLATES (U.N.O.): FY = 36 KSI (A36) ALL DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO THE LATEST EDITION OF THE AISC STEEL CONSTRUCTION MANUAL AND THE APPLICABLE CODES AND STANDARDS REFERENCED IN THE DESIGN STANDARDS. ALL WELDING ELECTRODES SHALL BE E70XX UNO. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND SHALL CONFORM TO AWS D1.101:1M STRUCTURAL WELDING CODE - STEEL, LATEST EDITION. ALL FILLET WELDS SHALL BE AS INDICATED, BUT NOT LESS THAN AISC MINIMUM. SEE CHART BELOW: MINIMUM SIZE FOR FILLET WELDS. MATERIAL THICKNESS OF THINNER PART JOINED (INCHES) MINIMUM SIZE OF FILLET WELD (INCHES). TO 1/4" INCLUSIVE: 1/8" OVER 1/4" TO 1/2": 3/16" OVER 1/2" TO 3/4": 1/4" OVER 3/4": 5/16". THE FABRICATOR SHALL FURNISH A STRUCTURAL SUBMITTAL WHICH SHALL BE CHECKED BY THE CONTRACTOR FOR COMPLETENESS AND CONTENT PRIOR TO SUBMITTING TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW. THE SUBMITTAL SHOULD INCLUDE FABRICATION AND ERECTION DRAWINGS. FABRICATION SHALL NOT COMMENCE UNTIL THIS REVIEW IS COMPLETED. CUTS, HOLES AND THEIR REINFORCEMENT (REQUIRED BY OTHER TRADES) SHALL BE SHOWN ON THE STRUCTURAL STEEL SHOP DRAWINGS AND SHALL BE MADE IN THE SHOP. FIELD BURNING OF HOLES & CUTS IN STRUCTURAL STEEL SHALL NOT BE PERMITTED EXCEPT BY WRITTEN PERMISSION FROM THE STRUCTURAL ENGINEER OF RECORD, UNLESS NOTED OTHERWISE ON THE DRAWINGS. SIZE AND SHAPE OF STRUCTURAL STEEL SHALL BE AS SHOWN ON DRAWINGS. SUBSTITUTES MAY BE USED IF PRE-APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD. AFTER ERECTION, ALL STEEL SHALL BE CLEANED OF ALL RUST, LOOSE MILL SCALE, AND OTHER FOREIGN MATERIAL. SCUFFS AND ABRASIONS SHALL BE FIELD TOUCHED UP. ALL STRUCTURAL STEEL TO BE PRIMED AND PAINTED. ALL FIELD CONNECTIONS ARE TO BE PAINTED TO MATCH ATTACHED COMPONENTS. ALL WELDING WORK SHALL FOLLOW INFORMATION IN AN APPROVED WELDING PROCEDURE SPECIFICATION SUPPORTED BY A PRE-QUALIFICATION RECORD. FOLLOWING REQUIREMENTS IN THE CURRENT BUILDING CODE ADOPTED VERSION OF THE AMERICAN WELDING SOCIETY (AWS) D1.1 - STRUCTURAL WELDING CODE STEEL. ALL WELDING WORK SHALL BE PERFORMED BY WELDERS CERTIFIED TO PERFORM WELDING WORK IN ACCORDANCE WITH THE GOVERNING WPS.

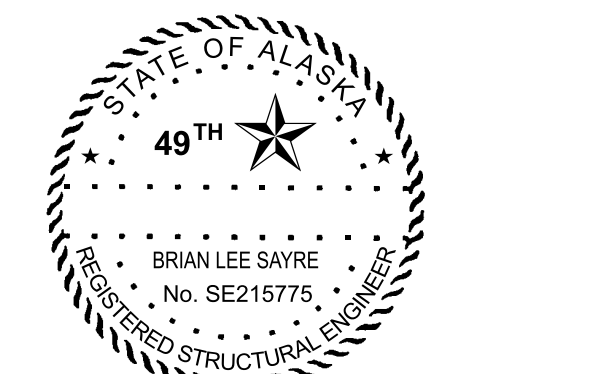
GENERAL NOTES:

- DESIGN IS BASED ON THE APPLICABLE CODES AND STANDARDS REFERENCED IN THE DESIGN STANDARDS. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH PROJECT DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CONNECTIONS, EMBED PLATE AND ANCHOR BOLT LOCATIONS FROM EQUIPMENT MANUFACTURER'S APPROVED DRAWINGS AND STEEL FABRICATOR'S ANCHOR BOLT AND EMBED PLATE SETTING PLANS, WHICH HAVE BEEN APPROVED BY THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL WORK STRUCTURAL DRAWINGS TOGETHER WITH ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL AND CIVIL DRAWINGS AS APPLICABLE TO LOCATE DERESSED SLABS, SLOPES, DRAINS, REGISTS, BOLT SETTINGS, GRADES, ETC. ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK. DO NOT PENETRATE STRUCTURAL ELEMENTS (BEAMS, COLUMNS, WALLS, SLABS, STEEL DECK, ETC.) WITHOUT PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER. ALL STRUCTURES ARE DESIGNED TO BE STABLE AND SELF-SUPPORTING IN THEIR COMPLETED CONSTRUCTED STATE AT THE END OF CONSTRUCTION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCES THAT ENSURE THE STABILITY OF STRUCTURE AND ITS COMPONENTS DURING CONSTRUCTION. THIS INCLUDES BUT IS NOT LIMITED TO THE ADDITION OF SUPPORTS, BRACING, GUYS, WIRES, TIE DOWNS, SHORING AND RE-SHORING. SUCH TEMPORARY SUPPORTS SHALL BE DESIGNED BY QUALIFIED REGISTERED PROFESSIONAL ENGINEERS RETAINED BY THE CONTRACTOR. IN ACCORDANCE WITH LOCAL STATUTES AND REGULATIONS, TEMPORARY SUPPORTS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND INFORMATION RELATED TO THEM IS NOT INCLUDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS PRIOR TO ORDERING ANY MATERIALS AND SHALL NOTIFY THE ARCHITECT/ENGINEER IF DIFFERENT FROM WHAT IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL REVIEW THESE DRAWINGS AND VISIT THE PROJECT SITE BEFORE CONSTRUCTION BEGINS TO COMPARE ALL EXISTING CONDITIONS WITH WHAT IS SHOWN ON THESE DRAWINGS. IF THERE ARE CONDITIONS WHICH ARE DIFFERENT FROM WHAT IS SHOWN, THE STRUCTURAL ENGINEER OF RECORD SHALL BE NOTIFIED. THE CONTRACTOR SHALL ARRANGE A PRE-CONSTRUCTION MEETING WITH THE ARCHITECT/ENGINEER TO ENSURE THAT THE CONTRACTOR'S UNDERSTANDING OF THESE DRAWINGS AND PLAN FOR THE WORK IS IN ACCORDANCE WITH THE DESIGN INTENT AND TO CLARIFY ANY QUESTIONS THAT THE CONTRACTOR MAY HAVE. ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSEWHERE ON THE PROJECT, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN. THAT WHICH IS REFERENCED AS BEING ON "HOLD" SHALL BE INCLUDED IN THE BID AND WORK, HOWEVER FABRICATION AND/OR CONSTRUCTION SHALL NOT PROCEED UNTIL THE "HOLD" REFERENCE IS REMOVED. DO NOT SCALE THE STRUCTURAL DRAWINGS TO DETERMINE DIMENSIONS OR MATERIAL QUANTITIES. ELEVATIONS: FINISHED GROUND FLOOR EL. = 0'-0" (TYP. U.N.O.) FINISHED GROUND FLOOR REF. EL. = SEE CIVIL DWGS FOR PROJECT SPECIFIC DATUM & ELEVATION SHOP DRAWING SUBMITTALS: A. CONTRACTOR SHALL SUBMIT TO BRPH FOR REVIEW SHOP DRAWINGS FOR ALL APPLICABLE TRADES IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. B. IN ORDER TO EXPEDITE REVIEW OF SHOP DRAWINGS BY BRPH AND AVOID ANY NEED FOR RE-SUBMITTAL BY THE CONTRACTOR, SUBMITTED SHOP DRAWINGS SHALL BE COMPLETE WITH ADEQUATE AND NECESSARY INFORMATION SHOWN TO FACILITATE THEIR REVIEW. C. CONTRACTOR SHALL REVIEW THE SHOP DRAWINGS THOROUGHLY AND VERIFY DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. BEFORE SUBMITTING TO BRPH FOR REVIEW. SHOP DRAWINGS NOT REVIEWED AND MARKED APPROVED BY THE CONTRACTOR WILL BE REJECTED AND RETURNED. D. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION BETWEEN SHOP DRAWINGS AND DRAWINGS OF DIFFERENT TRADES. ANY FIELD ISSUES AS A RESULT OF THE LACK OF SUCH COORDINATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

DESIGN CRITERIA:

- DESIGN DEAD LOADS: SEE S-006 DESIGN COLLATERAL LOADS (NOT FOR UPLIFT RESISTANCE): SEE S-006 DESIGN LIVE LOADS: SEE S-006 DESIGN WIND LOAD, (PER ASCE 7): ULTIMATE WIND SPEED, Vult: 170 MPH NOMINAL WIND SPEED, Vnom: 132 MPH EXPOSURE CATEGORY: D OCCUPANCY RISK CATEGORY: III ENCLOSURE CLASSIFICATION: ENCLOSED INTERNAL PRESSURE COEFFICIENT: ±0.18 DESIGN SNOW LOAD, (PER ASCE 7): GROUND SNOW LOAD: 30 PSF FLAT ROOF SNOW LOAD: 40 PSF ROOF SLOPE FACTOR, Cs: 1.0 EXPOSURE FACTOR, Ce: 0.8 IMPORTANCE FACTOR, I: 1.1 THERMAL FACTOR, Ct: 1.2 DRIFT HEIGHT: SEE S-006 DESIGN SEISMIC LOAD, (PER ASCE 7): SHORT DURATION DESIGN ACCELERATION, Sds: 1.9 RISK CATEGORY: III SITE CLASS: C SEISMIC DESIGN CATEGORY: E MAPPED ACCELERATION PARAMETERS: Ss = 2.3 S1 = 1.2 SPECTRAL RESPONSE COEFFICIENTS: S0.1 = 1.9 S0.2 = 1.1 ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE SEISMIC DRIFT: BUILDING ELEMENTS INCLUDING EXTERIOR CLADDING, STAIRS, ELEVATORS, AND MISCELLANEOUS METALS, MECHANICAL/ELECTRICAL/PLUMBING SYSTEM SUPPORTS, INTERIOR METAL STUD FRAMING, AND ANY OTHER ELEMENTS AS REQUIRED BY THE BUILDING CODE SHALL BE DESIGNED TO ACCOMMODATE THE PRIMARY STRUCTURE STORY DRIFTS WITH ANY APPLICABLE ELEMENT-SPECIFIC MODIFICATIONS PER CHAPTER 13 OF ASCE 7.

AREA 3 PAD D PACIFIC SPACEPORT COMPLEX, KODIAK ISLAND, ALASKA ALASKA AEROSPACE CORPORATION



ARCHITECT OF RECORD: BRIAN LEE SAYRE ALASKA SE 215775 DESIGNED BY: C. ALTINOK DRAWN BY: K. BANNISTER PROJECT NUMBER: C09729.001 DATE: 05/08/2026 TITLE: GENERAL NOTES



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DOCUMENT HISTORY

Table with 3 columns: No., Description, Date. Contains a single row for document history.

SOILS CONSTRUCTION (IBC 1705.6):

Table with 3 columns: ITEM, FREQUENCY OF INSPECTION, INSTRUCTIONS. Includes items like 'VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS' and 'VERIFY EXCAVATIONS EXTEND TO PROPER DEPTH'.

CONCRETE CONSTRUCTION (IBC 1705.3):

CONCRETE SPECIAL INSPECTIONS AND TESTS SHALL NOT BE REQUIRED FOR: 1. ISOLATED SPREAD CONCRETE FOOTINGS OF BUILDINGS THREE STORIES OR LESS ABOVE GRADE PLANE THAT ARE FULLY SUPPORTED ON EARTH OR ROCK...

Table with 4 columns: ITEM, FREQUENCY OF INSPECTION, INSTRUCTIONS, REFERENCED STANDARD. Includes items like 'REINFORCING STEEL INCLUDING PRESTRESSING TENDONS', 'REINFORCING BAR WELDABILITY', 'REINFORCING BAR WELDING', 'CAST-IN BOLTS & EMBEDS', 'ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS', 'USE OF REQUIRED MIX DESIGN', 'CONCRETE TESTS', 'CONCRETE & SHOTCRETE PLACEMENT', 'CURING TEMPERATURE AND TECHNIQUES', 'ERECTION OF PRECAST CONCRETE', 'STRENGTH VERIFICATION', 'FORMWORK'.

SPECIAL INSPECTIONS AND TESTS FOR ELEMENTS SUBJECT TO SEISMIC RESISTANCE (IBC 1705.13 & IBC 1705.14)

SPECIAL SEISMIC INSPECTIONS ARE REQUIRED UNLESS ONE OF THE FOLLOWING EXEMPTIONS APPLIES: 1. THE STRUCTURE CONSISTS OF LIGHT-FRAME CONSTRUCTION & THE DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS, S0.1 < 0.5, THE BUILDING HEIGHT OF THE STRUCTURE <= 35 FT...

STRUCTURAL STEEL INSPECTIONS AND NONDESTRUCTIVE TESTING (NDT) OF WELDED JOINTS (IBC 1705.13.1, IBC 1705.14.1, & AISC 341-16 CHAPTER J)

STRUCTURAL STEEL SEISMIC INSPECTIONS ARE REQUIRED FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY B, C, D, E, OR F EXCEPT FOR THE FOLLOWING: 1. STEEL BUILDING STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY B OR C WHERE THE RESPONSE MODIFICATION COEFFICIENT, R = 1, IS DESIGNATED FOR 'STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE...'...

Table with 4 columns: ITEM, FREQUENCY OF INSPECTION, INSTRUCTIONS. Includes items like 'REDUCED BEAM SECTIONS (RBS)', 'PROTECTED ZONES', 'H-PILES', 'COMPLETE-JOINT-PENETRATION (CJP) GROOVE WELDS IN MATERIALS 5/16-INCH THICK OR GREATER', 'COMPLETE-JOINT-PENETRATION (CJP) GROOVE WELDS OF BEAMS TO COLUMNS FOR MATERIALS LESS THAN 5/16-INCH THICK', 'PARTIAL-JOINT-PENETRATION (PJP) GROOVE WELDS OF COLUMN SPLICES AND COLUMNS TO BASE PLATES', 'BASE METAL THICKER THAN 1-1/2-INCH LOADED IN TENSION IN THE THROUGH-THICKNESS DIRECTION IN TEE AND CORNER JOINTS WHERE THE CONNECTED MATERIAL IS > 3/4 INCH AND CONTAINS CJP GROOVE WELDS', 'THERMALLY CUT SURFACES OF BEAM COPEES AND ACCESS HOLES AT WELDED SPLICES AND CONNECTIONS', 'REDUCED BEAM SECTION (RBS) REPAIR', 'WELD TAB REMOVAL SITES'.

DESIGNATED SEISMIC SYSTEMS (IBC 1705.13.4 & IBC 1705.14.3):

DESIGNATED SEISMIC SYSTEM INSPECTIONS ARE REQUIRED FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C, D, E, OR F.

Table with 4 columns: ITEM, FREQUENCY OF INSPECTION, INSTRUCTIONS. Includes 'DESIGNATED SEISMIC SYSTEMS VERIFICATION'.

SPECIAL INSPECTIONS AND TESTS FOR ELEMENTS SUBJECT TO SEISMIC RESISTANCE (IBC 1705.13 & IBC 1705.14) CONT'D

ARCHITECTURAL COMPONENTS (IBC 1705.12.5, IBC 1705.13.7, & IBC 1705.14.2):

SEISMIC INSPECTIONS OF ARCHITECTURAL COMPONENTS ARE REQUIRED FOR SEISMIC DESIGN CATEGORY D, E, OR F. CERTIFICATES OF SEISMIC QUALIFICATIONS ARE REQUIRED FOR SEISMIC DESIGN CATEGORY B, C, D, E, OR F.

Table with 4 columns: ITEM, FREQUENCY OF INSPECTION, INSTRUCTIONS. Includes items like 'ERECTION AND FASTENING OF EXTERIOR CLADDING GREATER THAN 30 FEET ABOVE GRADE OR WALKING SURFACE AND WEIGHT > 5 PSF', 'ERECTION AND FASTENING OF EXTERIOR NONBEARING WALLS GREATER THAN 30 FEET ABOVE GRADE OR WALKING SURFACE', 'ERECTION AND FASTENING OF INTERIOR NONBEARING WALLS GREATER THAN 30 FEET ABOVE GRADE OR WALKING SURFACE AND WEIGHT > 15 PSF', 'ERECTION AND FASTENING OF INTERIOR AND EXTERIOR VENEER GREATER THAN 30 FEET ABOVE GRADE OR WALKING SURFACE AND WEIGHT > 5 PSF', 'ACCESS FLOORS', 'STORAGE RACKS 8 FEET OR GREATER IN HEIGHT', 'VERIFICATION OF SEISMIC QUALIFICATION IN SEISMIC DESIGN CATEGORY B, C, D, E, OR F'.

PLUMBING, MECHANICAL, AND ELECTRICAL COMPONENTS (IBC 1705.13.6 & IBC 1705.14.2)

Table with 4 columns: ITEM, FREQUENCY OF INSPECTION, INSTRUCTIONS. Includes items like 'ANCHORAGE OF ELECTRICAL EQUIPMENT FOR EMERGENCY OR STANDBY POWER SYSTEMS IN SEISMIC DESIGN CATEGORY C, D, E, OR F', 'ANCHORAGE OF OTHER ELECTRICAL EQUIPMENT IN SEISMIC DESIGN CATEGORY E OR F', 'INSTALLATION AND ANCHORAGE OF PIPING SYSTEMS DESIGNED TO CARRY HAZARDOUS MATERIALS AND THEIR ASSOCIATED MECHANICAL UNITS IN SEISMIC DESIGN CATEGORY C, D, E, OR F', 'INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY HAZARDOUS MATERIALS IN SEISMIC DESIGN CATEGORY C, D, E, OR F', 'INSTALLATION AND ANCHORAGE OF VIBRATION CONSTRUCTION SYSTEMS HAVING A CLEARANCE OF <= 1/4" BETWEEN THE EQUIPMENT SUPPORT FRAME AND RESTRAINT IN SEISMIC DESIGN CATEGORY C, D, E, OR F', 'INSTALLATION OF MECHANICAL AND ELECTRICAL EQUIPMENT WHERE AUTOMATIC FIRE SPRINKLER SYSTEMS ARE INSTALLED IN SEISMIC DESIGN CATEGORY C, D, E, OR F (INCLUDES DUCTWORK, PIPING SYSTEMS, AND THEIR STRUCTURAL SUPPORTS)', 'VERIFICATION OF SEISMIC QUALIFICATION IN SEISMIC DESIGN CATEGORY B, C, D, E, OR F'.

SEISMICALLY ISOLATED STRUCTURES (IBC 1705.13.8 & 1705.14.3):

Table with 4 columns: ITEM, FREQUENCY OF INSPECTION, INSTRUCTIONS. Includes 'FABRICATION AND INSTALLATION OF SEISMIC ISOLATION SYSTEM IN SEISMIC DESIGN CATEGORY B, C, D, E, OR F', 'VERIFICATION OF TESTING PER ASCE 7-16 SECTION 17.8'.

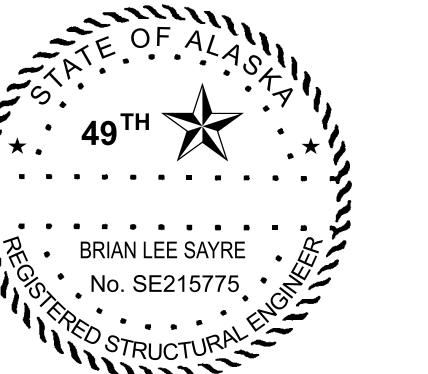
SPECIAL INSPECTIONS AND TESTS FOR ELEMENTS SUBJECT TO WIND RESISTANCE (IBC 1705.11)

APPLIES FOR BUILDINGS AND STRUCTURES IN THE FOLLOWING AREAS: 1. IN WIND EXPOSURE B, WHERE BASIC WIND SPEED V IS >= 150 MPH ASD 2. IN WIND EXPOSURE C OR D, WHERE BASIC WIND SPEED V IS >= 140 MPH ASD

WIND-RESISTING COMPONENTS (IBC 1705.11.3)

Table with 4 columns: ITEM, FREQUENCY OF INSPECTION, INSTRUCTIONS. Includes 'FASTENING OF ROOF COVERING, ROOF DECK, AND ROOF FRAMING CONNECTIONS', 'FASTENING OF EXTERIOR WALL COVERING AND WALL CONNECTIONS TO ROOF AND FLOOR DIAPHRAGMS AND FRAMING'.

AREA 3 PAD D PACIFIC SPACEPORT COMPLEX, KODIAK ISLAND, ALASKA ALASKA AEROSPACE CORPORATION



ARCHITECT OF RECORD: BRIAN LEE SAYRE ALASKA SE 215775 DESIGNED BY: C. ALTINOK DRAWN BY: K. BANNISTER PROJECT NUMBER: C09729.001 DATE: 05/08/2026 TITLE: SPECIAL INSPECTIONS

DRAWING NO. S-003

DRAWING NO.

S-003









FOR CONSTRUCTION

DOCUMENT HISTORY

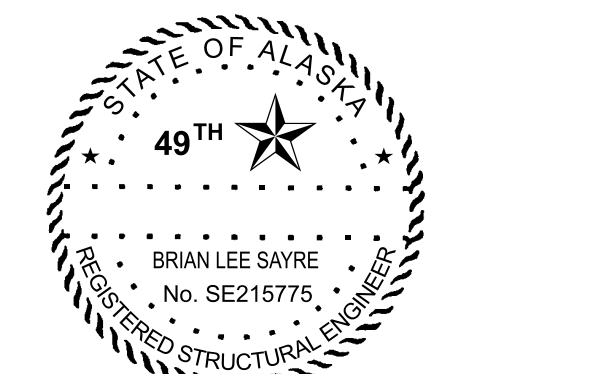
Table with 4 columns: No., Description, Date, and By. It contains a single entry for the initial document release.

FOR CONSTRUCTION

DOCUMENT HISTORY

Table with 4 columns: No., Description, Date, and By. It contains a single entry for the initial document release.

AREA 3 PAD D PACIFIC SPACEPORT COMPLEX, KODIAK ISLAND, ALASKA ALASKA AEROSPACE CORPORATION



ARCHITECT OF RECORD: BRIAN LEE SAYRE ALASKA SE 215775

DRAWN BY: K. ALTINOK PROJECT NUMBER: CO9729.001 DATE: 05/08/2026

CONCRETE SPECS

S-008

SECTION 033000 - CAST-IN-PLACE CONCRETE PART 1 - GENERAL 1.1 SUMMARY A. Section Includes: 1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes. B. Related Requirements: 1. Section 031000 "Concrete Forming and Accessories" for form-facing materials, form lines, insulating concrete forms, and wallposts. 2. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement. 1.2 DEFINITIONS A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, and other pozzolans materials subject to compliance with requirements. B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials. 1.3 ACTION SUBMITTALS A. Product Data: For each of the following: 1. Portland cement. 2. Fly ash. 3. Slag cement. 4. Blended hydraulic cement. 5. Aggregates. 6. Admixtures: a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity of air at time of concrete placement, curing conditions, and use of other admixtures. 7. Vapor retarders. 8. Liquid floor treatments. 9. Curing materials. 10. Joint fillers. B. Design Mixtures: For each concrete mixture, include the following: 1. Mixture identification. 2. Minimum 28-day compressive strength. 3. Durability exposure class. 4. Maximum w/cm. 5. Calculated equilibrium unit weight, for lightweight concrete. 6. Slump limit. 7. Air content. 8. Nominal maximum aggregate size. 9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted. 10. Intended placement method. 11. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments. C. Shop Drawings: 1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure. a. Location of construction joints is subject to approval of the Architect. D. Concrete Schedule: For each location of each Class of concrete indicated in "Concrete Mixtures" Article, including the following: 1. Concrete Class designation. 2. Location within Project. 3. Exposure Class designation. 4. Formed Surface Finish designation and final finish. 5. Final finish for floors. 6. Curing process. 7. Floor treatment if any. 1.4 INFORMATIONAL SUBMITTALS A. Material Certificates: For each of the following, signed by manufacturers: 1. Cementitious materials. 2. Admixtures. 3. Curing compounds. 4. Vapor retarders. 5. Joint-filler strips. B. Material Test Reports: For each of the following, from a qualified testing agency: 1. Portland cement. 2. Fly ash. 3. Slag cement. 4. Blended hydraulic cement. 5. Aggregates. 6. Admixtures. C. Research Reports: For concrete admixtures in accordance with ICC's Acceptance Criteria AC108. D. Preconstruction Test Reports: For each mix design. 1.5 QUALITY ASSURANCE A. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment. 1.6 PRECONSTRUCTION TESTING A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture. 1. Include the following information in each test report: a. Admixture dosage rates. b. Slump. c. Air content. d. Seven-day compressive strength. e. 28-day compressive strength. 1.7 DELIVERY, STORAGE, AND HANDLING A. Comply with ASTM C94/C94M and ACI 301. 1.8 FIELD CONDITIONS A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1. B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1. PART 2 - PRODUCTS 2.1 CONCRETE - GENERAL A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents. 2.2 CONCRETE MATERIALS A. Cementitious Materials: 1. Portland Cement: ASTM C150/C150M, Type III, gray. 2. Fly Ash: ASTM C618, Class C or F. 3. Slag Cement: ASTM C989/C989M, Grade 100 or 120. B. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S, Class 2S, Class 1S, coarse aggregate or better, graded. Provide aggregates from a single source. 1. Alkali-Silica Reaction: Comply with one of the following: a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293. b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1293 and c. Alkali Content in Concrete: Not more than 4 lb/cu. yd. for moderately reactive aggregate or 3 lb/cu. yd. for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1177. Based on alkali content being calculated in accordance with ACI 301. 2. Maximum Coarse-Aggregate Size: 1-1/2 inches, but not to exceed 1/5 of narrowest dimension between forms; 1/3 of slab depth; or 3/4 of minimum clear spacing between reinforcement; nominal. 3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement. C. Air-Entraining Admixture: ASTM C262/C262M. D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions except those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride. 1. Water-Reducing Admixture: ASTM C494/C494M, Type A. 2. Retarding Admixture: ASTM C494/C494M, Type B. 3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D. 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F. 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G. 6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II. E. Water and Water Used to Make Ice: ASTM C94/C94M, potable. 2.3 VAPOR RETARDERS A. Sheet Vapor Retarder: Class A: ASTM E1745, Class A, not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape. B. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or silicofluorinated materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces. 2.4 CURING MATERIALS A. Absorbent Cover: AKASHTO M 192, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry. B. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet. 1. Color: a. Ambient Temperature Below 50 deg F: Black. b. Ambient Temperature Between 50 deg F and 85 deg F: Any color. c. Ambient Temperature Above 85 deg F: White. C. Curing Paper: 8-foot-wide paper, consisting of two layers of fibred kraft paper laminated with double coating of asphalt. D. Water: Potable or complying with ASTM C1602/C1602M. E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B. F. Clear, Waterborne, Membrane-Forming, Nondissipating Curing Compound: ASTM C309, Type 1, Class B. G. Clear, Waterborne, Membrane-Forming, Curing and Sealing Compound: ASTM C1315, Type 1, Class A. 2.5 RELATED MATERIALS A. Expansion and Retention-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulose fiber or ASTM D1752, cork or self-expanding cork. B. Floor Slab Protective Covering: 8-foot-wide cellulose fabric. 2.6 CONCRETE MIXTURES - GENERAL A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301. B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement or concrete as follows: 1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures. 2. Slag Cement: 50 percent by mass. 3. Total of Fly Ash or Other Pozzolans, Slag Cement: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass. 4. Total of Fly Ash or Other Pozzolans: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass. C. Admixtures: Use admixtures in accordance with manufacturer's written instructions. 1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability. 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions. 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs, and concrete with a w/cm below 0.50. 2.7 CONCRETE MIXTURES A. Class A Normal-weight concrete used for footings, grade beams, and tie beams. 1. Exposure Class: ACI 318 F1 S0 W1 C1. 2. Minimum Compressive Strength: 4000 psi at 28 days. 3. Maximum w/cm: 0.45. 4. Slump Limit: 4 inches, plus or minus 1 inch or 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site. 5. Air Content: a. Exposure Class F1: 5.0 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inch nominal maximum aggregate size. 4.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-inch nominal maximum aggregate size. 4.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch nominal maximum aggregate size. b. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement. B. Class B Normal-weight concrete used for launch pad slab, L/M runway slab, and south rat slab. 1. Exposure Class: ACI 318 F3 S0 W1 C1. 2. Minimum Compressive Strength: 4000 psi at 56 days. 3. Maximum w/cm: 0.40. 4. Slump Limit: 4 inches, plus or minus 1 inch or 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site. 5. Air Content: a. Exposure Classes F2 and F3: 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inch nominal maximum aggregate size. 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-inch nominal maximum aggregate size. 5.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch nominal maximum aggregate size. b. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement. C. Class C Normal-weight concrete used for interior slabs-on-ground. 1. Exposure Class: ACI 318 F1 S0 W0 C0. 2. Minimum Compressive Strength: 4000 psi at 28 days. 3. Maximum w/cm: 0.50. 4. Minimum Cementitious Materials Content: 520 lb/cu. yd. 5. Air Content: a. Exposure Class F1: 5.0 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inch nominal maximum aggregate size. 4.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-inch nominal maximum aggregate size. 4.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch nominal maximum aggregate size. b. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement. D. Class D Normal-weight concrete used for stem walls, retaining walls, curbs, trench walls and trench slabs exposed to weather or deicers. 1. Exposure Class: ACI 318 F3 S0 W1 C2. 2. Minimum Compressive Strength: 4000 psi at 28 days. 3. Maximum w/cm: 0.45. 4. Slump Limit: 4 inches, plus or minus 1 inch, 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site. 5. Air Content: a. Exposure Classes F2 and F3: 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inch nominal maximum aggregate size. 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-inch nominal maximum aggregate size. 5.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch (38-mm) nominal maximum aggregate size. b. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

2.8 CONCRETE MIXING A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and ASTM C1116/C1116M, and furnish batch ticket information. B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M. Mix concrete materials in accordance with the following: 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not less than five minutes after ingredients are in mixer, before any part of batch is released. 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd. 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure. PART 3 - EXECUTION 3.1 INSTALLATION OF EMBEDDED ITEMS A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete. 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded. 2. Install anchor bolts, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303. 3.2 INSTALLATION OF VAPOR RETARDER A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions. 1. Place vapor retarder with longest dimension parallel with direction of concrete pour. 2. Face laps away from exposed direction of concrete pour. 3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete. 4. Lap joints 6 inches and seal with manufacturer's recommended tape. 5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps. 6. Seal penetrations in accordance with vapor retarder manufacturer's instructions. 7. Protect vapor retarder during placement of reinforcement and concrete. a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder. 3.3 JOINTS A. Contact joints true to line, with faces perpendicular to surface plane of concrete. B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence. 1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect. 2. Place joints perpendicular to main reinforcement. a. Continue reinforcement across construction joints unless otherwise indicated. b. Do not continue reinforcement through sides of strip placements of floors and slabs. 3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete. 4. Locate joints for beams, slabs, joists, and girders at three points. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection. 5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs. 6. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints between floors integral with walls, near corners, and in concealed locations where possible. C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows: 1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces. 2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks. D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated. 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings. 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 07920 "Joint Sealants," are indicated. 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together. E. Doweled Joints: 1. Install dowel bars and support assemblies at joints where indicated on Drawings. 2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint. F. Dowel Plates: Install dowel plates at joints where indicated on Drawings. 3.4 CONCRETE PLACEMENT A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed. 1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas. 2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses. B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement. C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect in writing, but not to exceed the amount indicated on the concrete delivery ticket. 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture. 2. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. 3. Consolidate concrete to avoid segregation. 4. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints. 5. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301. a. Do not use vibrators to transport concrete inside forms. b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate. F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete. 1. Do not place concrete floors and slabs in a checkerboard sequence. 2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners. 3. Maintain reinforcement in position on chairs during concrete placement. 4. Scribed slab surfaces with a straightedge and strike off to correct elevations. 5. Level concrete, cut high areas, and fill low areas. 6. Slope surfaces uniformly to drains where required. 7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. 8. Do not finish exterior slab surfaces before starting finishing operations. 3.5 FINISHING FORMED SURFACES A. As-Cast Surface Finishes: 1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material. a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep. b. Remove projections larger than 1 inch. c. Tie holes do not require patching. d. Surface Tolerance: ACI 117 Class D. 2. ACI 301 Surface Finish SF 2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. a. Patch voids larger than 3/4 inch wide or 1/2 inch deep. b. Remove projections larger than 1/4 inch. c. Patch holes to avoid segregation. d. Surface Tolerance: ACI 117 Class B. B. Related Uniformed Surfaces: 1. At tops of walls, horizontal offsets, and similar uniformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces. 2. Continue final surface treatment of formed surfaces uniformly across adjacent uniformed surfaces unless otherwise indicated. 3.6 FINISHING FLOORS AND SLABS A. Comply with ACI 302.1R recommendations for screeding, restraintgrinding, and finishing operations for concrete surfaces. Do not wet concrete surfaces. B. Scratch Finish: 1. While still plastic, texture concrete surface that has been screeded and bull-floated or darbed. 2. Use stiff brushes, brooms, or rakes to produce a profile depth of 1/4 inch in one direction. 3. Apply scratch finish to surfaces to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes. C. Float Finish: 1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. 2. Repeat float passes and restraintgrinding until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete. 3. Apply float finish to surfaces to receive trowel finish. D. Trowel Finish: 1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. 2. Continue troweling passes and restraintgrinding until surface is free of trowel marks and uniform in texture and appearance. 3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings. 4. Do not add water to concrete surface. 5. Do not apply hand-troweled finish to concrete, which has a total air content greater than 3 percent. 6. Apply a trowel finish to surfaces exposed to view. 7. Finish and measure surface, so gap at any point between concrete surface and an unrevealed, freestanding, 10-ft. (3.05-m) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch (6 mm) [3/16 inch (4.8 mm)] 1/8 inch (3 mm) [1/16 inch (1.6 mm)] 1/8 inch (3 mm) [1/16 inch (1.6 mm)]. E. Trowel and Fine-Broom Finish: Apply a first broom finish to surfaces (indicated on Drawings) [where ceramic or quarry tile is to be installed by either thickset or thinset method]. While concrete is still plastic, slightly sparsely surface with a fine broom perpendicular to main traffic route. 1. Coordinate required final finish with Architect before application. 2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces. Retain "Broom Finish" Paragraph below if applicable. Broom finish is generally used on exterior concrete steps and platforms, ramps, and other surfaces subject to light foot traffic. F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings. 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. 3.7 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS A. Filling In: 1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated. 2. Mix, place, and cure concrete, as specified, to blend with in-place construction. 3. Provide other miscellaneous concrete filling indicated or required to complete the Work. B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded. C. Equipment Bases and Foundations: 1. Coordinate sizes and locations of concrete bases with actual equipment provided. 2. Construct concrete bases 8 inches high unless otherwise indicated on Drawings and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support. 3. Minimum Compressive Strength: 4000 psi at 28 days. 4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base. 5. For supported equipment, install epoxy-embedded anchor bolts that extend through concrete base and anchor into structural concrete substrate. 6. Prior to pouring concrete, place and secure anchorage devices. a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded. b. Cast anchor-bolt insert into bases. c. Install anchor bolts to elevations required for proper attachment to supported equipment. D. Steel Pan Slabs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories, as shown on Drawings. 1. Screed, tamp, and trowel finish concrete surfaces.

3.8 CONCRETE CURING A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. 1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing. 2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing. 3. Maintain moisture loss no more than 0.2 lb/yd. ft. x h, calculated in accordance with ACI 305.1, before and during finishing operations. B. Curing Formed Surfaces: Comply with ACI 308.1 as follows: 1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. 2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions. 3. If forms remain during curing period, moist cure after loosening forms. 4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows: a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete. b. Continuous Sprinkling: Maintain concrete surface continuously wet. c. Absorbive Cover: Pre-dampen absorbive material before application; apply additional water to absorbive material to maintain concrete surface continuously wet. d. Water-Retention Sheetting Materials: Cover exposed concrete surfaces with sheeting material, laying or lapping seams. e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions. 1. Recast areas subject to heavy rainfall within three hours after initial application. 2) Maintain continuity of coating and repair damage during curing period. C. Curing Uniformed Surfaces: Comply with ACI 308.1 as follows: 1. Begin curing immediately after finishing concrete. 2. Interior Concrete Floors: a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following: 1) Absorbive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorbive cover over entire area of floor. a) Lap edges and ends of absorbive cover not less than 12 inches. b) Maintain absorbive cover water saturated, and in place, for duration of curing period, but not less than seven days. 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. a) Water: 1) Cure for not less than seven days. 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following: a) Water: 1) Continuous water-fog spray. b) Floors to Receive Penetrating Liquid Floor Treatments: Contractor has option of the following: 1) Absorbive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorbive cover over entire area of floor. a) Lap edges and ends of absorbive cover not less than 12 inches. b) Maintain absorbive cover water saturated, and in place, for duration of curing period, but not less than seven days. 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape. b) Cure for not less than seven days. 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following: a) Water: 1) Continuous water-fog spray. b) Floors to Receive Chemical Stain: 1) As soon as concrete has sufficient set to permit application without marring concrete surface, install curing paper over entire area of floor. 2) Install curing paper square to building lines, without wrinkles, and in a single length-without end joints. 3) Butt sides of curing paper tight, do not overlap sides of curing paper. 4) Leave curing paper in place for duration of curing period, but not less than 28 days. c) Floors to Receive Lithetone Flooring: 1) As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorbive cover over entire area of floor. 2) Rewet absorbive cover, and cover immediately with polyethylene moisture-retaining cover with edges lapped 6 inches and sealed in place. 3) Secure polyethylene moisture-retaining cover in place to prohibit air from circulating under polyethylene moisture-retaining cover. 4) Leave absorbive cover and polyethylene moisture-retaining cover in place for duration of curing period, but not less than 28 days. f. Floors to Receive Curing Compound:

1) App























