

**MISCELLANEOUS CONCRETE
Section 03000
YUBA COUNTY PARKING
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PART 1 - GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. Standard Specifications. The work embraced herein shall be done in accordance with the provisions of the STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2009 Edition, written by Public Works Standards, Inc., insofar as the same may apply, which specifications are hereinafter referred to as the Standard Specifications.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02200, Earthwork.

1.03 QUALITY ASSURANCE

- A. Use only new materials and products.
- B. Use materials and products of one manufacturer whenever possible.
- C. All materials, components, assemblies, workmanship and installation are to be observed by the Inspector. Work not so inspected is subject to uncovering and replacement.

1.04 SUBMITTALS

- A. Refer to Standard Specification 2-5.3.
- B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. Materials list: Submit to the Architect a complete list of all materials proposed to be used in this portion of the work. Submitted items should include but are not limited to sand, gravel, admixtures, surface treatments, coloring agents, sealers, fibers, cast-in-place accessories, forming and curing products and concrete mix designs.
- D. Submit executed Guarantee of Contractor/Subcontractor per Article 1.05.

1.05 GUARANTEE

- A. Refer to Standard Specification Section 6-8.
- B. Submit fully executed Guarantee with submittal package required by Article 1.04. See Part 3 of this specification regarding concrete finishing and defective concrete.

1.06 REFERENCES AND STANDARDS

- A. 2007 California Building Code (CBC) as adopted by the Division of the State Architect.

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- B. ACI Standards, ACI 211.1, ACI 318-05, ACI 302, IR-04, ACI 301-05, ACI 305R-99, ACI 306R-02, ACI 308-98.
- C. ASTM C-94, Specification for Ready-Mixed Concrete.
- D. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice (latest edition).
- E. ASTM – American Society for Testing and Materials.
- F. YUBA COUNTY Standards and Specifications

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations.
- D. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.
- E. Store cement in weathertight building, permitting easy inspection and identification. Protect from dampness. Lumpy or stale cement will be rejected.
- F. Aggregates: Prevent excessive segregation, or contamination with other materials or other sizes of aggregate. Use only one supply source for each aggregate stock pile.

1.08 ADEQUACY AND INSPECTION

- A. Design, erect, support, brace and maintain formwork and shoring to safely support all vertical and lateral loads that might be applied until such loads can be carried by concrete.
- B. Notify Project Manager at least 48 hours prior to placing of concrete.

1.09 PROTECTION

- A. Finish surfaces shall be protected at all times from concrete pour. Inspect forming against such work and establish tight leak-proof seal before concrete is poured. Finish work defaced by concrete pour shall be replaced.

1.10 FIELD MEASUREMENTS

- A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

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PART 2 - PRODUCTS

2.01 MATERIALS

- A. Cement: Portland cement, ASTM C150, Type II, per ACI 318 Section 3.2.
- B. Concrete Aggregates: Normal weight aggregates shall conform to ASTM C33, except as modified by this section. Combined grading shall meet limits of ASTM C33. Lightweight aggregate shall conform to ASTM C330, suitably processed, washed and screened, and shall consist of durable particles without adherent coatings.
- C. Water: Clean and free from deleterious amounts of acids, alkalis, scale, or organic materials and per ACI 318 Section 3.4.
- D. Fly Ash: Western Fly Ash, conforming to ASTM C618 for Class N or Class F materials (Class C is not permitted). Not more than 15% (by weight) may be substituted for portland cement.
- E. Water Reducing Admixture: Admixture to improve placing, reduce water cement ratio, and ultimate shrinkage may be used. Provide WRDA 64 by Grace Construction Products or approved equal. Admixture shall conform to ASTM C494 and ACI 318 Section 3.6. Such admixture must receive prior approval by the Architect, Structural Engineer, and the Testing Lab, and shall be included in original design mix.
- F. Accelerating Admixture: Admixture to accelerate concrete strength and tempering. Admixture shall conform to ASTM C494 Type E and shall be used in concrete mixes where "High Early Concrete Mix" is shown on the drawings. Accelerator shall be of a non-corrosive type. Such admixture shall be included in original design mix.
- G. Air-entraining Admixture: Daravair 1000 by Grace Construction Products or approved equal. Admixture must conform to ASTM C260 and CBC Section 1904 A.2.1.
- H. Exterior Flatwork Expansion Joint Sealant: See specification section 07900 – Joint Sealants.
- I. Surface Treatments and Coloring Agents:
 - 1. Glare Reduction Colorant: "L10 Glare Reducer" as manufactured by Master Builders/L.M. Scofield or approved equal. Provide at all exterior concrete slabs, walks, ramps, stairs (including bleachers) and other exposed flatwork to eliminate glare. Omit glare reduction colorant where Color Hardener, Integral Color or Stain are utilized. Provide 2-pounds of colorant per cubic yard of concrete. This is a maximum amount and Architect may adjust proportion to a lesser amount if desired. Add colorant to mix in accordance with manufacturer's printed instructions.
- J. Form Coating: Material which will leave no residue on concrete surface that will interfere with surface coating, as approved by the Architect.

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- K. Expansion Joint Material: Preformed 1/2" fiber material with bituminous binder manufactured for use as concrete expansion joint material, as accepted by the Architect.
- L. Reinforcement Bars: New billet steel deformed bars conforming to requirements of ASTM A615 or ASTM A706; Grade 60. Dowels for installation through control or construction joints shall be smooth or shall be wrapped on one end for slippage.
- M. Reinforcing supports: Galvanized metal chairs or spacers or metal hangers, accurately placed and securely fastened to steel reinforcement in place. Bottom bars in footings may be supported with concrete blocks.
- N. Truncated Domes: Vitrified Polymer Composite (VPC), Cast-In-Place Detectable/Tactile Warning Surface Tiles, "Armor-Tile" as manufactured by Engineered Plastics Inc., (800)682-2525, or accepted equal. Tiles shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. Color as selected by Architect from standard colors. The tile shall incorporate an in-line pattern measuring nominal 0.2" in height, 0.9" base diameter, and 0.45" top diameter, spaced at 2.35" on-center as measured on a diagonal and 1.67" as measured side by side. The field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.045" high, per square inch. Tiles shall comply with Americans with Disabilities Act and the California Code of Regulations (CCR) Title 24, Part 2, Chapter 11B. Install tiles as recommended by manufacturer.
- O. Curing Compound (for exterior slabs only): Burke Aqua Resin Cure by Burke By Edoco, 1100 Clear by W.R. Meadows or accepted equal. Water based membrane-forming concrete curing compound meeting ASTM C 309 and C1315.
- P. Concrete Bonding Agent: Weld-Crete by Larson Products Corp., Daraweld C by Grace Construction Products or accepted equal.
- Q. Patching Mortar: Meadow-Crete GPS, one-component, trowel applied, polymer enhanced, shrinkage-compensated, fiber reinforced, cementitious repair mortar for horizontal, vertical and overhead applications as manufactured by W.R. Meadows or accepted equal.
- R. Non-shrink Grout: Masterflow 713 Plus by Master Builders or approved equal. Premixed, non-metallic, no chlorides, non-staining and non-shrinking per CRD-C621, Corps of Engineers Specification and ASTM C 1107, Grades B and C.

2.02 CONCRETE DESIGN

- A. Designed Strength and Classes of Concrete:
 - 1. Class "B" concrete of 1" max. size aggregate shall have 3500 psi 28 day strength with a maximum water to cementitious materials ratio of 0.55.
- B. Slump Limits: Provide concrete, at point of final discharge, of proper consistency determined by Test Method ASTM C143. Slumps as follows:

Class "B", 4" plus or minus 1".
- C. Mix Design: All concrete used on this work will be designed for strength in accordance with

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provisions of CBC, Section 1905A.3. Should the Contractor desire to pump concrete, a modified mix design will need to be submitted for review. Fly ash may be used in concrete to improve workability in amounts up to 15% of cement weight.

2.03 MIXING OF CONCRETE

- A. Conform to requirements of CBC, Chapter 19A.
- B. All concrete shall be mixed until there is uniform distribution of material and mass is uniform and homogenous; mixer must be discharged completely before the mixer is recharged.
- C. Concrete shall be Ready-mixed Concrete: Mix and deliver in accordance with the requirements set forth in ASTM C94 and ACI 301. Batch Plant inspection may be waived in accordance with CBC Section 1704A.4A, when approved by Structural Engineer and DSA.
 - 1. Approved Testing Laboratory shall check the first batching at the start of the work and furnish mix proportions to the Licensed Weighmaster.
 - 2. Licensed Weighmaster to positively identify materials as to quantity and to certify to each load by ticket.
 - 3. Ticket shall be transmitted to Project Inspector by truck driver with load identified thereon. Project Inspector will not accept load without load ticket identifying mix and will keep daily record of pours, identifying each truck, its load and time of receipt.
 - 4. Placement of concrete shall occur as rapidly as possible after batching and in a manner which will assure that the required quality of the concrete is maintained. In no case may concrete be placed more than 90 minutes from batch time.
 - 5. Water may be added be added to the mix only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. In no case may more than 10 gallons of water shall be added to a full 9 yard load, providing load tag at time of mixing at plant will allow.

2.04 MATERIALS TESTING

- A. Materials testing of concrete and continuous batch plant inspection may be waived in accordance CBC Sections 1704A.4.4 when approved by Structural Engineer and DSA.
- B. Testing of concrete shall be performed per article 3.07 of this specification.

2.05 EQUIPMENT

- A. Handling and mixing of concrete: Project Inspector may order removal of any equipment which in his opinion is insufficient or in any way unsuitable.

PART 3 - EXECUTION

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3.01 APPROVAL OF FORMS AND REINFORCEMENTS

- A. Forms and reinforcements are subject to approval by the Project Inspector, and notice of readiness to place first pour shall be given to Architect and Inspector 48 hours prior to placement of concrete. Before placing concrete, clean tools, equipment and remove all debris from areas to receive concrete. Create all reinforcing and other embedded items off all coatings and soil that may impair bond with concrete.

3.02 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.03 CLEANING

- A. Reinforcement and all other embedded items at time of placing concrete to be free of rust, dirt oil or any other coatings that would impair bond to concrete.
- B. Remove all wood chips, sawdust, dirt, loose concrete and other debris just before concrete is to be poured. Use compressed air for inaccessible areas. Remove all standing water from excavations.

3.04 FORMING

- A. Form material shall be straight, true, sound and able to withstand deformation due to loading and effects of moist curing. Materials which have warped or delaminated, or require more than minor patching of contact surfaces, shall not be reused.
- B. Build forms to shapes, lines, grades and dimensions indicated. Construct form work to maintain tolerances required by ACI 301. Forms shall be substantial, tight to prevent leakage of concrete, and properly braced and tied together to maintain position and shape. Butt joints tightly and locate on solid backing. Chamfer corners where indicated. Form bevels, grooves and recesses to neat, straight lines. Construct forms for easy removal without hammering, wedging or prying against concrete.
- C. Space clamps, ties, hangers and other form accessories so that working capacities are not exceeded by loads imposed from concrete or concreting operations.
- D. Build openings into vertical forms at regular intervals if necessary to facilitate concrete placement, and at bottoms of forms to permit cleaning and inspection.
- E. Build in securely braced temporary bulkheads, keyed as required, at planned locations of construction joints.
- F. Slope tie-wires downward to outside of wall.
- G. Brace, anchor and support all cast-in items to prevent displacement or distortion.

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- H. During and immediately after concrete placing, tighten forms, posts and shores. Readjust to maintain grades, levels and camber.
- I. Slabs, Walks, Curbs and Gutters:
 - 1. Expansion Joints: Install at locations indicated, and so that maximum distance between joints is 20' for exterior concrete unless otherwise shown. Expansion joint material shall be full depth of concrete section. Recess for backer rod and sealant where required.
 - 2. Curbs, Valley Gutter, and Curb & Gutter: Install expansion joints at 60' o.c. Expansion joint material shall be full depth of concrete section. Recess for backer rod and sealant where required.
 - 3. Isolation Joints: Install #30 roofing felt between walls and exterior slabs or walks so that paved areas are isolated from all vertical features, except where expansion joints are specifically indicated.
 - 4. Exterior Slabs and Walks: Install expansion joints at 20' o.c. maximum, both directions, unless shown otherwise on plans.

3.05 FORM COATING

- A. Before placement of reinforcing steel, coat faces of all forms to prevent absorption of moisture from concrete and to facilitate removal of forms. Apply specified material in conformance with manufacturer's written directions.
- B. Before re-using form material, inspect, clean thoroughly and recoat.
- C. Seal all cut edges.

3.06 INSTALLATION

- A. General: Reinforcement shall be accurately placed at locations indicated on the drawings within required tolerances and providing required clearances. Reinforcement shall be secured prior to placement of concrete such that tolerances and clearances are maintained. Coverage shall be in accordance with Section 1907A.7 of the CBC. Keep worker on job to maintain position of reinforcing as concrete is placed. Reinforcement must be in place before concreting is begun. Install dowels as shown on drawings. Give notice whenever pipes, conduits, sleeves, and other construction interferes with placement; obtain method of procedure to resolve interferences. All construction joints in concrete shall have dowels of size and spacing as shown, or as approved by Architect.
- B. Placing Tolerances:
 - 1. Per ACI 301 or CRSI/WCRSI Recommended Practice for Placing Reinforcing Bars, unless otherwise shown.
 - 2. Clear distance between parallel bars in a layer shall be no less than 1", the maximum bar diameter not 1 ½ times the maximum size of coarse aggregate.

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C. Splices:

1. General: Unless otherwise shown on drawings, splice top reinforcing at midspan between supports, splice bottom reinforcing at supports and stagger splices at adjacent splices whenever possible. Bar laps shall be wired together. Reinforcing steel laps shall be as follows:
 - a. Lap splices in concrete: Lap splice lengths not less than 75 bar diameters, 36" minimum for #6 bars and smaller. 93 bar diameters for #7 bars and larger.

3.07 INSPECTION

- A. Approval of reinforcing steel, after installation, must be received from Inspector. Project Manager must be notified 48 hrs. in advance of beginning of concrete placement operations.

3.08 PLACING OF CONCRETE

- A. Adjacent finish surfaces shall be protected at all times during the concrete pour and finishing. Verify that all formwork is tight and leak-proof before concrete is poured. Finish work defaced during the concrete pour and finishing shall be replaced at no extra cost to the owner.
- B. Transport concrete from mixer to place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients. Deposit as close as practicable in final position to avoid re-handling or flowing. Partially hardened concrete must not be deposited in work. **Concrete shall not be wheeled directly over the top of reinforcing steel.**
- C. Placing: Once started, continue concrete pour continuously until section is complete between predetermined construction joints. Prevent splashing of concrete onto adjacent forms or reinforcement and remove such accumulation of hardened or partially hardened concrete from forms or reinforcement before work proceeds in that area. **Free fall of concrete shall not to exceed 4'-0" in height.** If necessary, provide lower openings in forms to inject concrete and to reduce fall height.
- D. Remove form spreaders as placing of concrete progresses.
- E. Place footings as monolithic and in one continuous pour.
- F. Keep excavations free of standing water, but moisture condition sub-grade before concrete placement.
- G. Compacting: All concrete shall be compacted by mechanical vibrators. Concrete shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms. Vibrating shall not be applied to concrete which has already begun to initially set nor shall it be continued so long as to cause segregation of materials.
- H. Grout under column bearing plates: Dry pack with specified Non-shrink Grout, as recommended by manufacturer. Use as little water as practicable. Ram grout solid into place.

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- I. Concrete Flatwork:
 - 1. All flatwork shall be formed and finished to required line and grades. Flatwork shall be true and flat with a maximum tolerance of 1/8" in 10' for flatness. Flatwork which is not flat and are outside of the maximum specified tolerances shall be made level by the Contractor at no additional expense to the Owner.
 - 2. Thoroughly water and soak the flatwork subgrade as required to achieve required moisture content prior to the concrete pour. Provide damming as required to keep water within the formed area and to allow for proper saturation of the subgrade.
- J. Placing in hot weather: Comply with ACI 305R-91. Concrete shall not exceed 85 degrees F at time of placement. Concrete shall be delivered, placed and finished in a sufficiently short period of time to avoid surface drying. Concrete shall be kept wet continuously after placement until implementation of curing procedure in accordance with this specification.
- K. Placing in cold weather: Comply with ACI 306R-02. Protect from frost or freezing. No antifreeze admixtures are permitted. When deposited concrete during freezing or near-freezing weather, mix shall have temperature of at least 50 degrees F but not more than 90 degrees F. Concrete shall be maintained at temperature of at least 50 degrees F for not less than 72 hours after placing or until it has thoroughly hardened. Provide necessary thermal coverings for any flat work exposed to freezing temperatures.
- L. Horizontal construction joint: Keep exposed concrete face of construction joints continuously moist from time of initial set until placing of concrete; thoroughly clean contact surface by chipping entire surface not earlier than 5 days after initial pour to expose clean hard aggregate solidly embedded, or by approved method that will assure equal bond, such as green cutting. If contact surface becomes contaminated with soil, sawdust or other foreign matter, clean entire surface and re-chip entire surface to assure proper adhesion.

3.09 CONCRETE FINISHES

- A. Concrete Slab Finishing: Finish slab as required by ACI 302.1R. Use manual screeds, vibrating screeds or roller compacting screeds to place concrete level and smooth. Do not use "jitterbugs" or other special tools designed for the purpose of forcing the coarse aggregate away from the surface leaving too thick a layer of mortar. While concrete is still wet but sufficiently hardened to bear a persons weight on knee boards, wood float surface to a true and even plane. Use sufficient pressure to bring moisture to surface and push coarse aggregate to just below surface. After surface moisture has disappeared, float to true surface and finish utilizing steel trowel. Surface shall be free from trowel marks, depressions, ridges or other blemishes. Tolerance for flatness shall be 1/8" in 10'. Provide final finish as follows:
 - 1. Flatwork, medium broom finish: Typical finish to be used at all exterior walks, stairs and ramps. Brooming direction shall run perpendicular to slope to form non-slip surface.
- B. Curb Finishing: Steel trowel.
- C. Joints and Edges: Mark-off exposed joints, where indicated, with ¼" radius x ¼ of the depth

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of the slab deep groover or edging tool. Joints to be clean cut, straight, parallel or square with respect to concrete walk edge. Tool all edges of exposed expansion and contraction joints, walk edges, and wherever concrete walk adjoins other material or vertical surfaces.

- D. Exposed Concrete Surface Finishing (not including top surface of flatwork): Remove fins and rough spots immediately following removal of forms from concrete which is to be left exposed. Damaged and irregular surfaces and holes left by form clamps and sleeves shall be patched with grout. Tie wires are to be removed to below exposed surface and holes pointed up with neat cement paste similar to procedure noted under "Patching" below. Removal of tie wires shall extend to distance of 2" below established grade lines. Ends of tie wires shall be cut off flush at all other, unexposed locations. Care shall be taken to match adjacent finishes of exposed concrete surface. After patching, all concrete that is to remain exposed, shall be sacked with a grout mixture of 1-part cement, 1 1/2- parts fine sand and sufficient water to produce a consistency of thick paint. After first wetting the concrete surface, apply mixture with a brush and immediately float entire surface vigorously using a wood float. Keep damp during periods of hot weather. When set, excess grout shall be scraped from wall with edge of steel trowel, allowed to set for a time, then wiped or rubbed with dry burlap. Entire finishing operation of any area shall be completed on the same day. This treatment shall be carried to 4" below grade, and all patching and sacking shall be done immediately upon removal of the forms.

3.10 CURING

- A. Concrete in Forms: Keep forms and top on concrete between forms continuously wet until removal of forms. Maintain exposed concrete in wet condition for 14 days following removal of forms.
- B. Flatwork: Cure utilizing Curing Compound. Upon completion of job, wash clean per manufacturer's recommendations.

3.11 DEFECTIVE CONCRETE

- A. Determination of defective concrete shall be made by the Architect. His opinion shall be final in identifying areas to be replaced, repaired or patched.
- B. The Owner reserves the right to survey the flatwork, if it is determined to be outside of the maximum tolerance for flatness. If the flatwork is found to be out of tolerance, then the Contractor will be required to bring the flatwork to within tolerance by either grinding and filling or replacing. Repair methods proposed by the Contractor must be acceptable to the Owner and Architect. The Contractor will be responsible for reimbursing the Owner for any surveying costs incurred. Determination of flatwork flatness, surveying and any remedial work must be completed far enough in advance so that the project schedule is maintained, delays are avoided and the new flatwork or flatwork repairs are properly cured.
- C. As directed by Architect, cut out and replace defective concrete. All defective concrete shall be removed from the site. No patching is to be done until surfaces have been examined by Architect and permission to begin patching has been provided.
- D. Permission to patch any area shall not be considered waiver of right, by the Owner, to require removal of defective work, if patching does not, in opinion of Architect, satisfactorily

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restore quality and appearance of surface.

- E. Defective concrete is:
1. Concrete that does not match the approved mix design for the given installation type.
 2. Concrete not meeting specified 28-day strength.
 3. Concrete which contains rock pockets, voids, spalls, cracks, exposed reinforcing, or other such defects which adversely affect strength, durability or appearance.
 4. Concrete which is incorrectly formed, out of alignment or not plumb or level.
 5. Concrete containing embedded wood or debris.
 6. Concrete having large or excessive patched voids which were not completed under Architect's direction.
 7. Concrete not containing required embedded items.
 8. Excessive Shrinkage, Cracking, Cracking, Cracking or Curling; Defective Finish: Remove and replace if repair to acceptable condition is not feasible.
 9. Concrete that is unsuitable for placement or has set in truck drum for longer than 90 minutes from the time it was batched.
 10. Expansion joint felt that is not isolating the full depth of the concrete section, and recessed as required for backer rod and sealant where required.
- F. Patching: Install specified Patching Mortar per manufacturer's recommendations. REPAIRS TO DEFECTIVE CONCRETE WHICH AFFECT THE STRENGTH OF ANY STRUCTURAL CONCRETE MEMBER OR COMPONENT ARE SUBJECT TO APPROVAL BY THE ARCHITECT.

3.12 CONCRETE TESTING

- A. Comply with CBC Section 1903A, 1905A.3, 1916A and as specified in B. below. Costs of tests will be borne by the Contractor.
- B. Four identical cylinder samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, or not less than once for each 50 cubic yards of concrete, or not less than once for each 2,000 square feet of surface area for slabs or walls. In addition, samples for strength tests for each class of concrete shall be taken for seven-day tests at the beginning of the concrete work or whenever the mix or aggregate is changed.
- C. Strength tests will be conducted by the Testing Lab on one cylinder at seven (7) days and two cylinders at twenty-eight (28) days. The fourth remaining cylinder will be available for testing at fifty-six (56) days if the 28-day cylinder test results do not meet the required design strength.

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- D. On a given project, if the total volume of concrete is such that the frequency of testing required by paragraph B. above would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.
- E. Cost of retests and coring due to low strength or defective concrete will be paid by the Contractor.

3.13 REMOVAL OF FORMS

- A. Remove without damage to concrete surfaces.
- B. Sequence and timing of form removal shall insure complete safety of concrete structure.
- C. Forms shall remain in place for not less than the following periods of time. These periods represent cumulative number of days during which temperature of air in contact with concrete is 60 degrees F and above.
 - 1. Vertical forms of foundations, walls and all other forms not covered below: 5 days.
 - 2. Slab edge screeds or forms: 7 days.
- D. Concrete shall not be subjected to superimposed loads (structure or construction) until it has attained its full design strength and not for a period of at least 21 days after placing. Concrete systems shall not be subjected to construction loads in excess of design loads.

END OF SECTION