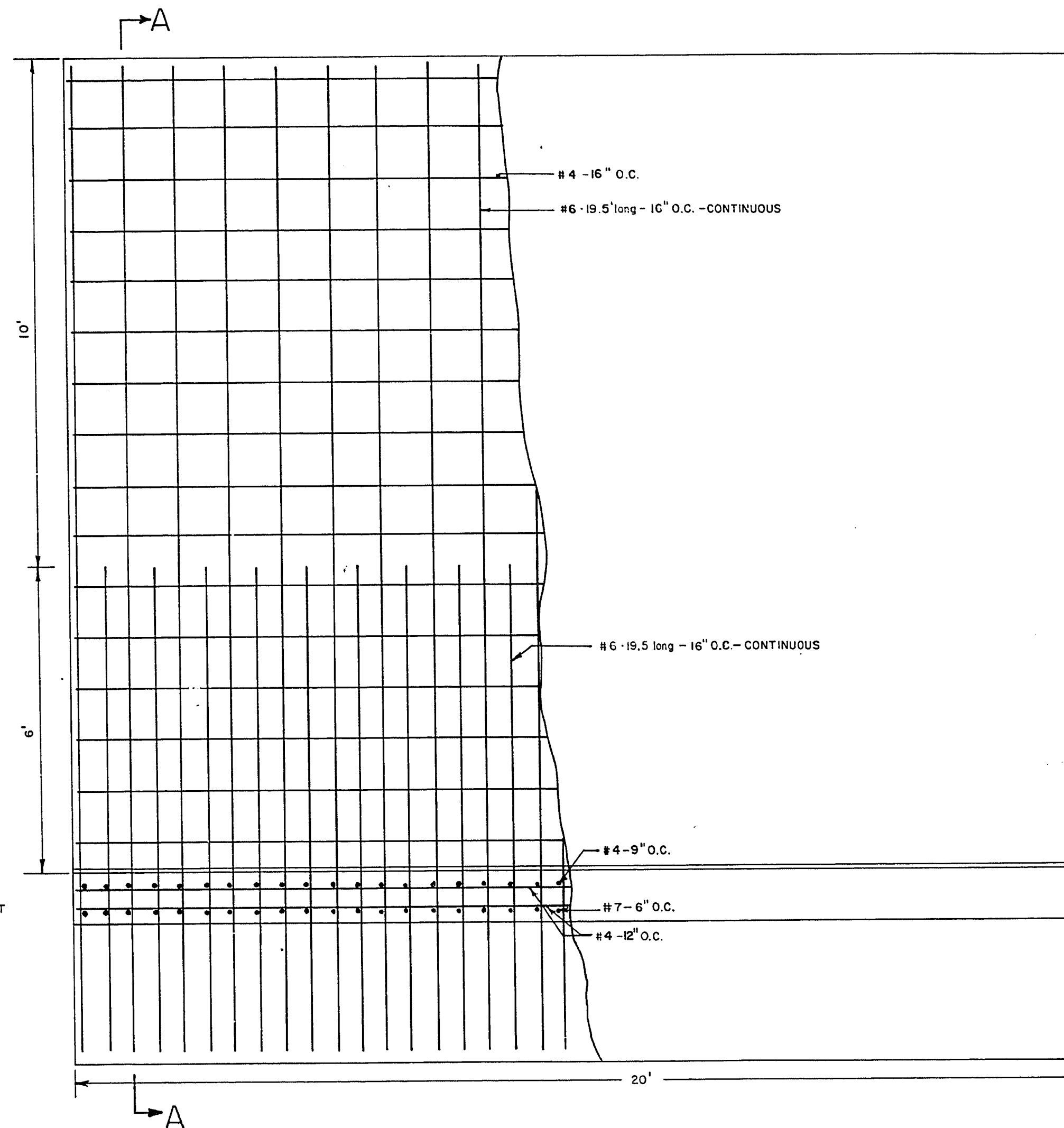
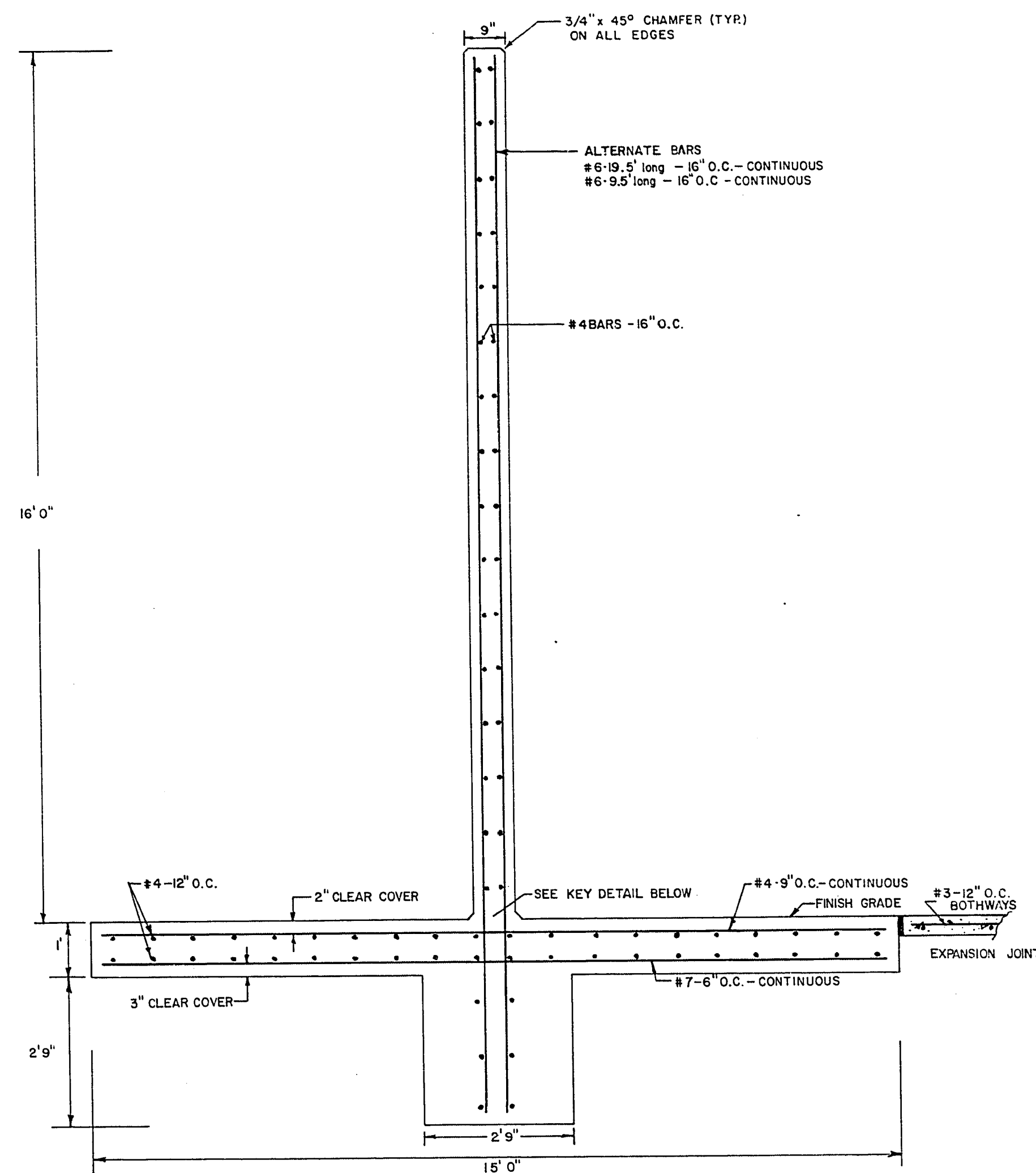




TECHNICAL SPECIFICATIONS

Site Clearing, Excavation and Subgrade Preparation

The natural ground surface shall be cleared of all vegetation and all other objectionable materials, as determined by the Engineer, and removed from site. Existing fill materials and loose, disturbed soils shall be excavated to expose natural soil having a minimum of 80% relative compaction. The natural soil having 80% (minimum) relative compaction shall be scarified to a depth of six inches and brought to optimum moisture content by watering. The soil shall then be compacted to 90% of the maximum dry density. The soil surface concrete is to be placed shall be laid down at least four feet from the existing curb. After the subgrade is compacted, it shall be thoroughly damped with water to insure that no moisture will be absorbed from the concrete.

If over excavation should occur, it shall be continued until a uniform depth of cut is obtained over the entire area under the foundations. Foundations shall not be placed over partial cut and fill areas. Fill material used in over excavated areas shall be approved by the Engineer and shall be compacted to 90% of the maximum dry density. Fill material shall not be placed in lifts greater than six inches thick.

Base preparation for the 4" reinforced concrete paving shall be constructed as shown in the details on the Contract Drawings.

Concrete Mix Design

Mix design for foundations and 4" reinforced concrete court paving.

- o Cement - 6 sacks per cu. yd., type V
- o Aggregate - One and one half inch (1 1/2 in.) maximum size
- o Minimum Strength - 3500 psi in 28 days
- o Minimum Slump - 3.5 inches
- o Maximum Water Cement Ratio - 0.40

Mix design for 16' high reinforced concrete wall.

- o Cement - 6.5 sacks per cu. yd., type II
- o Aggregate - Three quarters of an inch (3/4 in.) maximum size
- o Minimum Strength - 3500 psi in 28 days
- o Maximum Slump - 4.0 inches
- o Maximum Water Cement Ratio - 0.40

The Contractor shall submit mix designs for each mix, stating the proposed slump and the proportional weights of cement, saturated surface dry aggregates and water. These mixes shall be proved by preliminary tests 30 days before concreting and shall show a 28 day average strength 15% higher than the ultimate required.

TECHNICAL SPECIFICATIONS –continued

Forms

Forms shall be constructed plumb level, square, true-to-line, water tight, accurate to the dimension shown and of sufficient strength to support the imposed construction loads without deviation from the line and surface of the unloaded form. Responsibility for the design and engineering of the form construction, bracing and general form safety shall rest with the Contractor.

Plywood forms used for all exposed surfaces shall be of the grade 'Exterior B-B (Concrete Form)', conforming to the latest product standards for soft plywood, construction and industrial, of the National Bureau of Standards. Plywood shall be furnished and placed in 48 in. widths and in uniform lengths of not less than 96 in., except where the dimension of the member formed is less than the specified panel dimension. All form panels shall be placed, aligned, braced, and supported so that all joints are level and continuous. All joints shall be filled with an approved quick-setting compound and finished flush with the interior of the form. Unless otherwise shown on the plans, all sharp edges shall be chamfered with 3/4 in. by 3/4 in. triangular fillets.

Upon removal of forms the Contractor shall place adequate reshores to prevent injury to the concrete. The Contractor shall be responsible for safe practice in removing forms and shoring and for placing adequate reshores.

Reinforcing Steel

Bars and rods shall be free from scale, oil, and structural defects, and shall be maintained so on the job.

Reinforcing steel shall be grade 40 billet steel conforming to ASTM A-615.

Steel bending processes shall conform to requirements of Manual of Standard Practice or the Concrete Reinforcing Steel Institute.

Bending or straightening shall be accomplished so that the steel will not be damaged. Kinked bars shall not be used.

Reinforcing steel accurately placed shall be securely tied using 16 gauge black annealed steel wire at every third crossing and in such a manner as to prevent displacement during the placing of concrete and construction loads. Stirrups and tie bars shall be tied to longitudinal bars at four corners minimum.

Care shall be exercised in the placing and securing of reinforcement to maintain the proper distances or clearance between parallel bars and between bars and the forms.

Placing of Concrete

Concrete shall be deposited, when practicable, in its final position without segregation, rehandling, or flowing.

When possible, concreting shall be continuous until the section is complete.

Forms shall be clean before concrete is placed.

Concrete shall be spaded and vibrated with approved mechanical vibrators to maximum subsidence, without segregation, and adjacent to forms and joints.

Reinforcing bars shall be shaken to insure bond with concrete.

Plumb bulkheads, when used as joints at the end of a day's work, shall be arranged at right angles to the plane of stress and in areas of minimum shear as directed by the Engineer.

When stoppage of concreting operations occurs for any reason, construction joints shall be placed either horizontally or vertically as needed, provided with keys to resist shear, and the development bond as directed by the Engineer. Before concreting operations are resumed, the surface of the concrete shall be cut or chipped to remove all laitance and expose the aggregate. The surface of the concrete shall be thoroughly saturated and coated with a 1:2 mortar before the placing of the concrete is resumed.

Water accumulating during placing shall be removed. Concrete shall not be deposited in such accumulations.

Pumping and conveying and chuting of concrete shall be done only by approval of the Engineer and with equipment to insure a continuous flow without segregation.

Concrete Finishes

Wall Surfaces - After the forms are stripped, all surfaces shall be inspected by the Engineer prior to making any repairs or patches. Raised and irregular areas shall be rubbed and ground to achieve a smooth and uniform surface. Small voids, holes, honeycombing and other such defects shall be repaired with a 1:2 (cement to sand) mortar pressed into holes and floated smooth. Plastering and steel troweling of surfaces shall not be allowed. In no case will the repair of extensive honeycombed concrete, as determined by the Engineer, be permitted.

In such cases the wall with extensive honeycombing shall be removed and repoured. All repairs and replacements herein specified shall be promptly executed by the Contractor at his own expense.

After the wall has been satisfactorily repaired and cured for a minimum of 14 days, a grout mixture of 1:1 (cement to sand) grout with the consistency of thick paint shall be applied to all wall surfaces. The sand used in the mixture shall be fine enough to pass a no. 16 sieve. The grout shall be applied with a wood float and shall be vigorously rubbed into the concrete surface filling all small air holes. Excess grout shall be removed with a steel trowel after it has had sufficient time to set. The grout shall be continuously applied until the wall is completely covered with grout. The setting period after the grout has dried the surface shall be rubbed down with burlap to remove any paint-like film of grout on the concrete.

Exposed Footing Surfaces and 4" Reinforced Concrete Paving

Following placing, the concrete shall be screed to the required grade, tamped to consolidate the concrete and to bring a thin layer of mortar to the surface and floated to a smooth flat, uniform surface. The concrete shall then be edged at all headers.

Preliminary troweling may be done with a long-handled trowel, but the finish troweling shall be done with a hand trowel.

	Department of Public Services	Engineering Design Division	 2-6-77	Scale (h) 1"= 20'	Scale (v)	W.O. no. 3477
				Fid. bk. no.	Date 9-12-79	
				Design by C. KAJKOWSKI	Drawn by M. JONES	
				Approved by the Director of Public Services		Date
Revisions Date						