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CALGON CORPORATION
PITTSBURGH, PA

FOR

CCS
STANDARD PLANT

CCS TREATMENT PLANTS

SPECIFICATION NO. 7209A-RS5
FOR
CONCRETE WORK

US EPA RECORDS CENTER REGION 5
506816

February 15, 1974

REVISIONS

This specification has been revised as indicated below and the new pages added and/or the existing pages revised are attached as replacement for those previously issued.

REV.	DATE	BY	PAGE	REMARKS
0	2-18-74	ABC	All	Issued for Construction
1	5-27-77	ABC	4 & 6	Revised and Reissued for Construction
2	12-13-79	WAB	1	Title Update

1.0 SCOPE OF WORK

1.1 The work covered by this specification consists of furnishing all labor and materials required to install all plain and reinforced concrete shown on the drawings and called for herein and in the General Construction Specifications for Calgon Adsorption System installations.

2.0 APPLICABLE PUBLICATIONS

The following publications, of the issues listed below, but referred to herein by basic designation only, form a part of this specification to the extent indicated by the references thereto:

2.1 Specification for Structural Concrete for Buildings, ACI-301-72

2.2 Manual of Standard Practice, Concrete Reinforcing Steel Institute (CRSI)

2.3 Placing Reinforcing Bars, Concrete Reinforcing Steel Institute (CRSI)

2.4 Recommended Practice for Concrete Formwork, ACI-347

2.5 Specification for Concrete Aggregates, ASTM C-33

2.6 Specification for Ready-Mixed Concrete, ASTM C-94

2.7 Specification for Portland Cement, ASTM, C-150

2.8 Specification for Air Entraining Admixtures for Concrete, ASTM, C-260

2.9 Specification for Deformed Billet Steel Bars for Concrete Reinforcement, ASTM A-615

2.10 Specification for Cold Drawn Steel Wire for Concrete Reinforcement, ASTM A-82

2.11 Specifications for Welded Wire Fabric for Concrete Reinforcement, ASTM A-185 and A-497

2.12 Specification for Low-Carbon Steel Externally and Internally Threaded Standard Fasteners, ASTM A-307.

3.0 MATERIALS - CONCRETE

3.1 Cement

3.1.1 Normal Portland Cement shall be Type I or III and shall conform to ASTM C-150.

3.2 Aggregate

3.2.1 Fine aggregate shall be washed natural sand and shall conform to ASTM C-33.

3.2.2 Coarse aggregate shall be crushed stone or natural gravel and shall conform to ASTM C-33.

3.0 MATERIALS - CONCRETE (Cont'd)

3.3 Miscellaneous

3.3.1 Air entraining agent shall be MB VR by Master Builders Company, Darex AEA by W. R. Grace and Company, or AER by the Sika Chemical Corporation, and shall conform to ASTM C-260.

3.3.2 Water reducing agent shall be Pozzolith 100 or 200 by Master Builders Company, or Plastocrete by Sika Chemical Company.

3.3.3 Grouting material shall be Master Builders, EMBECO, or approved equal.

4.0 MATERIALS - REINFORCEMENT AND MISCELLANEOUS ITEMS

4.1 Reinforcing Steel

4.1.1 Reinforcing steel for cast in place concrete shall be Grade 60 and shall conform to ASTM A-615.

4.1.2 Welded wire fabric shall conform to ASTM A-185 or A-497.

4.1.3 Wire ties shall conform to ASTM, A-82

4.2 Embedded Materials

4.2.1 Anchor bolts complete with square nuts shall conform to ASTM A-307. Round or square steel washers shall be provided where indicated on the drawings.

4.2.2 Metal accessories including chairs, spacers, ties and other devices necessary for proper assembly, spacing, placing, and supporting of metal reinforcing for concrete work, shall be of shape, design, and size approved by the Engineer. Accessories which will be partially or fully exposed after forms are stripped, shall be galvanized after fabrication.

4.2.3 No wood supports shall be used for reinforcement accessories which will remain in the concrete.

4.3 Vapor Barrier

4.3.1 Vapor barrier shall be polyethylene film, 6 mils thick, ASTM E-96.

4.4 Joint Fillers

4.4.1 Premolded expansion joint filler shall be a non-bitumastic type such as urethane, styrofoam, etc. Sizes shall be as shown on the drawings and shall be 1/2" to 3/4" less in width than the thickness of the floor slab. If no thickness is shown, use 1/2".

RS5.3

4.0 MATERIALS - REINFORCEMENT AND MISCELLANEOUS ITEMS

4.4 Joint Fillers (Cont'd)

4.4.2 Water stops shall be PVC extruded dumbbell type and shall be flat 6" size. Stops shall be continuous and shall be complete with necessary fittings, unions and cement.

4.4.3 Joint sealer shall be Sika Chemical Corporation, Sikaflex T68, a self-leveling urethane sealant, or approved equal.

5.0 MATERIALS - CONCRETE FORMS

5.1 Form materials shall be wood, metal, structural hardboard or other approved material which will not adversely affect the surface of the concrete and which will produce or facilitate obtaining the specified surface finish of the concrete.

5.2 Form oil shall be an approved type of colorless mineral oil such as NoxCrete form coating, or other Engineer approved equal.

5.3 Form ties shall be factory fabricated, removable, or snap-off metal ties of approved design, which leave no metal within 1" of the concrete surface.

6.0 INSTALLATION - CONCRETE PLACEMENT

6.1 All concrete work covered by this specification shall be performed in strict accordance with requirements set forth in the Specification for Structural Concrete for Buildings, ACI-301, unless otherwise indicated herein or on the drawings.

6.2 Concrete shall be Ready-Mix and shall be from a plant approved by the Engineer. Mix shall be in accordance with ASTM C-94.

6.3 Concrete shall be designed to produce minimum crushing strength of 3000 psi at 28 days in standard laboratory test cylinders.

6.4 Concrete for work exposed to weather shall be mixed with an air-entraining admixture in conformance with ASTM C-260. This applies to concrete work in areas subject to freezing and thawing conditions in the cold weather seasons.

6.5 The use of calcium chloride shall be permitted only within the limitations of ACI-301.

7.0 INSTALLATION - REINFORCEMENT AND MISCELLANEOUS ITEMS

7.1 Reinforcing bars and bar supports shall be placed in the concrete forms in accordance with the recommended practices set forth in the CRSI "Manual of Standard Practice" and "Placing Reinforcing Bars".

7.2 All embedded items such as curb angles, sleeves, inserts, hangers, bolts, fixtures, etc., shall be carefully set so as to produce the end results for which they are intended.

7.3 The vapor barrier shall be carefully installed so as to provide a complete seal between the underslab porous fill and the ground level slab. Any damage occurring to the film shall be repaired to the satisfaction of the Engineer.

7.4 All premolded expansion joint filler shall be carefully installed and shall be set so as to leave space at the top of at least 1/2" for caulking with the specified sealant. The sealant shall be applied in strict accordance with the manufacturer's instructions.

7.5 Water stops shall be carefully installed and shall be so set as to provide a continuous seal throughout their entire length in the sump or basin.

8.0 INSTALLATION - FORMWORK

8.1 All formwork shall be designed, constructed and removed in strict accordance with the Recommended Practice for Concrete Formwork, ACI-347, unless otherwise indicated herein or on the drawings.

8.2 Corners of exposed concrete surfaces shall be beveled with moulding to produce a 3/4" chamfer. Extruded PVC or rubber chamfer formers may be used.

9.0 FINISH - CONCRETE

9.1 All slabs shall be trowel finished in accordance with Specification ACI-301.

9.2 All formed surfaces shall have a smooth form finish in accordance with Specification ACI-301.

10.0 GROUTING

10.1 After erection and alignment of the structural steel, vessels and equipment, all base plates shall be grouted with the specified material. Care must be exercised in placing the grout so as to assure complete filling of the space in which the material is to be placed. All shims used in erection shall be removed and grout shall be placed in the spaces left thereby.

11.0 TESTING

11.1 The Contractor shall employ an approved Testing Laboratory to perform all testing services as outlined herein and in Chapter 16 of ACI-301.

11.2 All sampling, storing, curing and testing shall be performed in accordance with ASTM C-31, C-39, C-172, and C-231 as applicable.

11.3 A set of four test cylinders shall be made from each 100 cubic yards of concrete or on any day that 25 or more cubic yards of concrete are placed. Test two cylinders at 7 days and the other two of the set at 28 days.

11.4 Reports of all tests shall be submitted to the Engineer, the Concrete Producer and Contractor. Reports shall contain the date of placement, date of test, name of job, mix proportions, type of cement, size of aggregate, names of admixtures, water to cement ratio, slump, location of batch in the structure, type of concrete and the breaking strength in psi, type of break, method of curing, percent of air for air entrained concrete, and temperature of both concrete and air.

11.5 When it appears that the laboratory cured cylinders fail to meet the strength requirements, the mix proportions, water/cement ratio, or the cement content shall be changed sufficiently to increase the strength to the specified value. Any cylinder failing to meet strength requirements shall be made available for inspection for at least 30 days by the Engineer, Contractor and Concrete Producer. In addition, where there is a question as to the quality of concrete, as determined by the strength tests, the Engineer shall have the right to order additional tests in accordnace with ASTM C-42 or to order load tests as outlined in Chapter 2 of AC1-318 for that portion of the structure where questionable concrete has been placed. If this additional testing indicates the concrete or construction does not comply with the specifications, then the total cost of this additional testing shall be paid by the Contractor.

11.6 All concrete work failing to meet the requirements of the specifications as determined by the additional tests shall be removed from the project site and replaced as the Engineer shall direct at the contractor's expense and at no cost to the Owner.

11.7 The use of the Testing Laboratory shall in no way relieve the Contractor of his responsibility to furnish materials and construction in full compliance with the Contract Documents.