

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02001

ACCESS FOR CONSTRUCTION

PART 1 GENERAL

- 1.1 SUBMITTALS
- 1.2 OVERLAND ACCESS

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

- 3.1 EXCAVATION FOR ACCESS
  - 3.1.1 Applicability
  - 3.1.2 Character of Materials
  - 3.1.3 Property Preservation
  - 3.1.4 Disposal of Excavated Material
  - 3.1.5 Shoaling

-- End of Section Table of Contents --

## SECTION 02001

## ACCESS FOR CONSTRUCTION

## PART 1 GENERAL

Access for construction shall include all work associated with site access and preparation. This shall include (but is not limited to) items such as access road construction, access road maintenance, access road removal, excavation performed for water-based access needs, disposal of any material excavated for access, installation and removal of fences and gates for Contractor work areas, location and protection of existing utilities, repair to any facilities damaged, and obtaining and complying with all permits (local, state, Federal). All aspects of access for construction shall be described in the Construction Plan.

## 1.1 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-08 Statements

Construction Plan; GA.

## 1.2 OVERLAND ACCESS

Reference is made to Contract Clauses: SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK and PERMITS AND RESPONSIBILITIES. The Contractor shall verify that all overland routes are fully accessible. The Contractor shall be responsible for obtaining any and all necessary licenses and permits applicable to overland access.

## PART 2 PRODUCTS (NOT APPLICABLE)

## PART 3 EXECUTION

## 3.1 EXCAVATION FOR ACCESS

## 3.1.1 Applicability

Excavation, if applicable, shall consist of the removal of every type of material encountered by the Contractor to access the east jetty and west jetty repairs for water-based access requirements.

## 3.1.2 Character of Materials

The material to be excavated will primarily consist of mixtures or layers of fine to coarse grained sand. Additional materials to be encountered may

consist of varying amounts of: mud, silt, gravel, cobbles, stone ranging up to 1.9 meters diameter, trash, lumber, metal, and other debris.

### 3.1.3 Property Preservation

All excavation operations shall be conducted in such a manner that existing jetty structures, which are to remain in place, will not be subjected to settlement or horizontal movement.

### 3.1.4 Disposal of Excavated Material

Excavation material suitable for disposal shall be placed at the disposal site as indicated on the plans. Excavation material not suitable for disposal, such as trash, tree stumps, tires, metal, and other debris, will not be permitted in the disposal area. Unsuitable material, if encountered, shall become the property of the Contractor, and shall be removed from the site at no expense to the Government.

### 3.1.5 Shoaling

Littoral transport of sand is a continuous process in the vicinity of Port Hueneme. Soundings shown on Government surveys indicate the general conditions existing only at the time of survey. Shoaling may occur after the time of survey. Historical bathymetric surveys are available for review at the Los Angeles District Office.

-- End of Section --

## SECTION TABLE OF CONTENTS

## DIVISION 02 - SITE WORK

## SECTION 02380

## SHORELINE/COASTAL PROTECTION FOR STRUCTURES

## PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS

## PART 2 PRODUCTS

- 2.1 MATERIALS
  - 2.1.1 Definitions
    - 2.1.1.1 Angular Stone
  - 2.1.2 General
  - 2.1.3 Stone Sources
    - 2.1.3.1 Source Authorization
    - 2.1.3.2 Source Development
    - 2.1.3.3 Source Documentation
    - 2.1.3.4 Potential Stone Sources
  - 2.1.4 Stone Quality
    - 2.1.4.1 Quality Compliance Testing
    - 2.1.4.2 Stone Quality Testing Requirements
    - 2.1.4.3 Stone Acceptance Criteria
  - 2.1.5 Gradation
    - 2.1.5.1 General
    - 2.1.5.2 Gradation of the A-11 Armor Stone
  - 2.1.6 Rejected Stone

## PART 3 EXECUTION

- 3.1 CONSTRUCTION PLAN
- 3.2 DAILY REPORT OF OPERATIONS
- 3.3 PLACEMENT OF SHORELINE PROTECTION
  - 3.3.1 Debris
  - 3.3.2 Armor Stone
  - 3.3.3 Reset Existing Capstone
  - 3.3.4 Demonstration Section
    - 3.3.4.1 General
    - 3.3.4.2 Demonstration Section Evaluation
- 3.4 STONE DELIVERY
  - 3.4.1 Delivery Tickets for Truck or Rail Transportation
  - 3.4.2 Scale Tickets and Records for Barge Transportation
  - 3.4.3 Stone Weight Marking

-- End of Section Table of Contents --

## SECTION 02380

## SHORELINE/COASTAL PROTECTION FOR STRUCTURES

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## American Society for Testing and Materials (ASTM)

ASTM C 88	(1990) Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C 127	(1988) Specific Gravity and Absorption of Coarse Aggregate
ASTM C 295	(1990) Petrographic Examination of Aggregates for Concrete
ASTM C 535	(1989) Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

## Corps of Engineers (COE)

CRD-148	Accelerated Expansion
---------	-----------------------

## 1.2 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Scale tickets and/or records of weights; FIO.

SD-08 Statements

Construction Plan; GA.

SD-09 Reports

Daily Report of Operations; FIO.

## PART 2 PRODUCTS

## 2.1 MATERIALS

### 2.1.1 Definitions

#### 2.1.1.1 Angular Stone

Stone which is obtained from bedrock deposits and is angular in shape.

#### 2.1.2 General

The Contractor shall make all arrangements, pay all royalties, and secure all permits for the procurement, furnishing and transporting of stone. The Contractor shall vary the quarrying, processing, loading and placing operations to produce the sizes and quality of stone specified. If the stone being furnished by the Contractor does not fully meet all the requirements of these specifications, the Contractor shall furnish, at no additional cost to the Government, other stone meeting the requirements of these specifications.

#### 2.1.3 Stone Sources

##### 2.1.3.1 Source Authorization

Before any stone is produced from a source for completion of the work under this contract, the source of stone must be authorized by the Contracting Officer's Representative. Authorization of a stone source shall not be construed as a waiver of the right of the Government to require the Contractor to furnish stone which complies with these specifications. Materials produced from localized areas, zones or strata will be rejected when such materials do not comply with the specifications.

##### 2.1.3.2 Source Development

Before a proposed source or sources of stone will be considered for sampling and testing, the Contractor must demonstrate that the source has sufficient stone to fulfill the contract requirements. If sufficient amounts of stone conforming to these specifications are not available from a source or sources used in the work, the Contractor shall submit stone from another source for authorization.

##### 2.1.3.3 Source Documentation

Authorization of a proposed stone source will be based on test results and/or service records. In general, current Corps of Engineers test results shall be required as outlined in paragraph: Quality Compliance Testing, below. In special cases, however, the Contracting Officer's Representative may elect to use either past Corps of Engineers test results, test results from other agencies or private laboratories, or service records. A service record is considered to be acceptable if stone from the proposed source has remained sound and functional after at least 10 years of exposure on a project similar to the one to be constructed under these specifications.

## 2.1.3.4 Potential Stone Sources

Table 1 shows a few of the sources in the project area which have either undergone recent quality compliance testing for use on Corps of Engineers projects or have acceptable service records:

Table 1 Stone Sources

<u>Source Name</u>	<u>Nearest City</u>
Harlow	Corona
Corona-Pacific	Corona
All-American Asphalt	Corona
3M	Corona
Eagle Valley	Corona
Pebbly Beach	Catalina
Ormond (Atkinson)	Riverside
Slover Mountain	Colton
Fish Canyon	Azusa
Gillibrand	Newhall
Pyrite Street	Riverside

Listing of a stone source is not to be construed as to current or future availability of the source, authorization of all materials from the source, nor as a waiver of inspection and testing of the source. Stone produced from any listed source must meet all the requirements set forth in these specifications. Listing of a stone source is also not to be construed as an indication that the source can produce the total quantity of stone required for the project. Stone may be furnished from other sources designated by the Contractor and authorized by the Contracting Officer's Representative subject to the conditions stated herein.

## 2.1.4 Stone Quality

## 2.1.4.1 Quality Compliance Testing

Samples for Corps of Engineers testing as specified in paragraph: Source Documentation shall be submitted a minimum of 10 days in advance of the time when the stone will be required in the work. Stone from a proposed source will be tested by the Government for quality compliance. The first test shall be at Government expense, however, if the stone fails the test(s), or if the Contractor desires to utilize more than one source, additional testing will be performed by the Government at the Contractor's expense. The cost of additional testing will be deducted from payment due the Contractor in the amount of \$550 for each sample tested for LA Abrasion, Absorption, and Specific Gravity, and an additional \$2500 per sample tested for Sulfate Soundness, Accelerated Expansion, Petrographic, and X-Ray Diffraction only. All test samples (135 kilograms minimum) shall be representative of the stone source and shall be obtained by the Contractor under the supervision of the Contracting Officer's Representative and delivered at the Contractor's expense to a testing laboratory approved by the Contracting Officer's Representative.

## 2.1.4.2 Stone Quality Testing Requirements

Stone shall be subjected to such tests as are necessary to demonstrate to the satisfaction of the Contracting Officer that the materials are acceptable for use in the work. As a minimum, the stone shall meet the following test requirements.

<u>Test</u>	<u>Test Method</u>	<u>Requirement</u>
Specific Gravity (Bulk SSD)	ASTM C 127	2.65 minimum
Absorption	ASTM C 127	2% maximum
Abrasion Loss	ASTM C 535	50% maximum loss <sup>(1)</sup>

In addition to the above tests, the Contracting Officer will have the option to require a subsequent round of testing with the additional tests, as listed below, as well as being subjected to a petrographic and X-Ray Diffraction analysis in accordance with ASTM C 295<sup>(3)</sup>. The stone must not contain any expansive clays.

<u>Test</u>	<u>Test Method</u>	<u>Requirement</u>
Sulfate Soundness	ASTM C 88 <sup>(2)</sup>	10% maximum loss
Accelerated Expansion	COE CRD-148	15% maximum loss

NOTE: (1) Stone which has a loss greater than the specified limit will be accepted if the Contractor demonstrates that the stone has a satisfactory service record.

NOTE: (2) The test shall be made on 50 particles each weighing 100 grams, +/-25 grams, in lieu of the gradation given in ASTM C 88.

NOTE: (3) The laboratory test procedure for petrographic and X-Ray Diffraction is performed according to ASTM C 295, except for the following requirements, which shall be added to each petrographic test run by the laboratory:

- a. A color, microscopic photograph shall be made of stone type and the individual minerals within the stone shall be identified by labels and arrows upon the photograph.
- b. A very detailed macroscopic and microscopic description shall be made of the stone, to include the entire mineral constituents, individual sizes, their approximate percentages and mineralogical histories. A description of the stone hardness, texture, weathering and durability factors shall also be discussed.
- c. A written summary of the suitability of stone based on the Petrographic and X-Ray Diffraction tests and the results of ASTM C 535 shall be presented in the final laboratory report on stone quality.

#### 2.1.4.3 Stone Acceptance Criteria

Prior to placement, all stone shall be subject to acceptance by the Contracting Officer. Acceptance of any stone shall not constitute acceptance of all stone from a source. All accepted stone shall be:

a. of the same lithology as the original stone from which test results or service records were taken as a basis for authorization of the source.

b. sound, durable and hard, and free from laminations, weak cleavages, undesirable weathering, or blasting or handling-induced fractures (or fracture zones which subtend more than 1/3 of the total circumference of the stone along the plane of fracturing).

c. of such character that it will not disintegrate from the action of air, water, or the conditions of handling and placing.

d. clean and free from earth, clay, refuse, or adherent coatings.

e. angular with a shape which assures interlocking with adjacent capstone, and with the greatest dimension of each piece not greater than 3 times the least dimension.

#### 2.1.5 Gradation

##### 2.1.5.1 General

Specified grading of all material shall be met both at the source and as delivered to the project. In addition, material not meeting the required grading due to segregation or degradation during placement shall be rejected. If test results show that stone does not meet the required grading, the hauling operation will be stopped immediately and will not resume until processing procedures are adjusted and a gradation test is completed showing gradation requirements are met. All gradation tests shall be at the expense of the Contractor. The relationship between stone weight in the table below is based on a specific gravity of 2.65.

##### 2.1.5.2 Gradation of the A-11 Armor Stone

Existing armor stone on the east jetty and west jetty shall be designated "Existing Capstone" and varies between approximately 4 to 14 metric tons. New armor stone may be required for reconstructing portions of the existing armor layer. This new armor stone shall be designated "A-11 Armor Stone".

The Contractor shall be responsible for maintaining the A-11 armor stone gradation indicated in these specifications. The Contractor shall provide proof of compliance to the Contracting Officer's Representative by supplying the total number of A-11 armor stones and specifying the individual weights of each stone (in metric tons) in each barge and/or truck load of A-11 armor stone. If truck or rail is used to move stone from a quarry to a barge loading area, this same documentation (total number of stones, individual weight of each stone) will be supplied to the Contracting Officer's Representative for each truck or rail load or stockpile prior to loading of any barge.

A compilation of the weights of individual stones delivered shall be supplied in the Daily Report of Operations for comparison with the A-11 armor stone gradations indicated in these specifications. If at any time the Contracting Officer's Representative determines that re-weighing of the

stones is necessary on any barge load or other delivery unit, this action will constitute a gradation test.

A-11 armor stone shall be quarried, angular stone reasonably well distributed within the limits specified in Table 2.

Table 2. A-11 Armor Stone Gradation

Weight of Individual Pieces (Metric Ton)	Percent Smaller (by total number)
14.0	100
11.0	30-50
9.0	0

#### 2.1.6 Rejected Stone

New stone of unsuitable quality and/or size distribution as required by these specifications shall be rejected. Any rejected stone shall be promptly removed from the project at no expense to the Government. Any portions of the work covered by these specifications containing rejected stone will be considered incomplete.

### PART 3 EXECUTION

#### 3.1 CONSTRUCTION PLAN

The Contractor shall submit a Construction Plan indicating the methods and equipment proposed to conduct all construction related operations. The plan shall be submitted to the Contracting Officer for approval not less than 10 days prior to the start of construction operations. The plan shall include as a minimum, but is not limited to, the following information:

- Order of work and all proposed time lines.
- Operation/use of the work/storage area.
- Layout of all vessels, barges, buoys, anchors, and ancillary equipment.
- Site access route(s).
- Site preparation requirements.

#### 3.2 DAILY REPORT OF OPERATIONS

The Contractor will be required to prepare and maintain a Daily Report of Operations and furnish copies thereof to the Contracting Officer's Representative. The daily reports shall document all construction related operations for all shifts in a 24-hour period. Further instruction on the preparation of the report shall be provided.

#### 3.3 PLACEMENT OF SHORELINE PROTECTION

##### 3.3.1 Debris

Any timbers, unsatisfactory material and debris within the reaches for construction shall be removed except as otherwise directed by the

Contracting Officer, and upon removal shall become the property of the Contractor. All materials shall be properly disposed of in accordance with the requirements of Section 01354 ENVIRONMENTAL PROTECTION, including any applicable local requirements.

### 3.3.2 Armor Stone

A-11 armor stone shall be placed in the locations and at the thickness shown without deviating from the lines and grade shown, including allowance for tolerances. Final shaping of the slope shall be performed concurrently with the initial placement of the stone. Stones shall be randomly selected and set in contact with each other so that the interstices between adjacent stones shall be as small as the character of the stone will permit. Stones shall be interlocked or keyed in with adjacent stones by rotating and setting them for maximum contact based on their angular shapes. Three points of contact (minimum) are required between a stone and adjacent stones. In general, the long axis of each stone shall be perpendicular to the axis of the structure and slope downward toward the center of the structure. Placement shall begin at the bottom of the slope. Stones shall be placed in a manner to avoid displacing underlying materials or placing undue impact force on underlying material that would cause the breaking of stones. Dropping of armor stone shall not be permitted. The equipment used in placing the stone shall be suitable for handling materials of the sizes required including the ability to place the stone over its final position before release and if necessary pick up and reposition the stone. Dragline buckets and skips shall not be used in placement. Moving stone by drifting or manipulating down the slope will not be permitted. The finished work shall be a well distributed mass, free of pockets of either smaller or larger stone, having a minimum of voids and with the maximum interlocking of stones.

### 3.3.3 Reset Existing Capstone

The work consists of moving and resetting existing capstone on the seaward side, harbor side, and crest of the jetty(ies) as appropriate. Existing capstone shall be removed, salvaged, and reset to achieve the required interlocking with newly placed stone. Moving and resetting of existing capstone shall be in accordance with the applicable portions of paragraph: "Armor Stone". Temporary storage may be necessary between lifting and final placing.

### 3.3.4 Demonstration Section

#### 3.3.4.1 General

Prior to placement of any A-11 armor stone or existing capstone, the Contractor shall construct a section of jetty repairs to demonstrate proposed operations. The section shall demonstrate procedures, methods, equipment, and capability for placing new A-11 armor stone and resetting existing capstone within the tolerances specified. The demonstration section shall consist of the location as identified in the plans. The quantities and gradation of all materials placed within the section shall be accurately tabulated and provided immediately to the Contracting Officer. The demonstration section shall conform with all applicable

requirements specified herein.

#### 3.3.4.2 Demonstration Section Evaluation

The Contractor shall not proceed with A-11 armor stone placement or existing capstone placement prior to the approval of the demonstration section by the Contracting Officer. Within a period of 3 days after completion of the section, the Contracting Officer shall determine the adequacy and acceptability of the section. The Contractor shall be notified as to the acceptability of the section. If the Contracting Officer determines the demonstration is noncompliant, the Contractor will be required to modify the methods of construction, equipment, and materials until compliance with these specifications is achieved. Upon acceptance of the demonstration section by the Contracting Officer, the demonstration section will be considered part of the new work.

### 3.4 STONE DELIVERY

#### 3.4.1 Delivery Tickets for Truck or Rail Transportation

Copies of delivery tickets shall be submitted to the Contracting Officer's Representative during the progress of the work. The Contractor shall furnish the Contracting Officer's Representative scale tickets for each load of material weighed. These tickets shall include tare weight, identification mark of each vehicle weighed, date, time, and location of the loading. A master log of all vehicle loading shall be furnished for each day of loading operation. The Contractor shall file with the Contracting Officer's Representative the master log of loadings, certified waybills and/or certified tickets as part of the Daily Report of Operations. Prior to the final payment, the Contractor shall furnish written certification that the material recorded on the submitted certified tickets was actually used in the construction covered by the contract.

#### 3.4.2 Scale Tickets and Records for Barge Transportation

Copies of Scale Tickets and/or Records of weights, including displacement weight date, shall be submitted for each load of material delivered to the site. The Contracting Officer's Representative will determine from the displacement weight date, the weight of stone shipped by barge and will certify displacement weight records. Each scale ticket and/or record shall include the gross, rate, dunnage, and net weight of stone. The weight of dunnage for each load will be determined, recorded, and certified by the Contracting Officer's Representative. Deliveries and numbered scale tickets and/or records shall be recorded on an approved system to maintain delivery control. Copies of scale tickets and/or records shall accompany each load of stone and a copy shall be delivered to the Contracting Officer's Representative as part of the Daily Report of Operations. Prior to the final payment, the Contractor shall furnish written certification that the material recorded on the submitted certified tickets and/or records was actually used in the construction covered by the contract.

#### 3.4.3 Stone Weight Marking

All A-11 armor stone delivered shall have its weight plainly marked on each

stone.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02442

NAVIGATION AID STRUCTURES

PART 1 GENERAL

1.1 SUBMITTALS

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Concrete

- 2.1.1.1 Portland Cement
- 2.1.1.2 Ready Mix Concrete
- 2.1.1.3 Aggregate
- 2.1.1.4 Reinforcement
- 2.1.1.5 Forms
- 2.1.1.6 Curing Compound

2.1.2 Steel

- 2.1.2.1 Anchor Bolts
- 2.1.2.2 Nuts
- 2.1.2.3 Washers

2.1.3 Nonshrink Grout

2.2 CONCRETE MAT FOUNDATION

2.2.1 Strength

2.2.2 Mixing

- 2.2.2.1 Mixer
- 2.2.2.2 Central Plant
- 2.2.2.3 Water
- 2.2.2.4 Calcium Chloride

2.2.3 Reinforcement

PART 3 EXECUTION

3.1 CONSTRUCTION FABRICATION

- 3.1.1 General
- 3.1.2 Approval
- 3.1.3 Cold Joints
- 3.1.4 Vibration
- 3.1.5 Curing

3.2 FINISHING

- 3.2.1 Surface
- 3.2.2 Stripping

3.3 SETTING OF BASE PLATE

- 3.3.1 General

- 3.3.2 Nonshrink Grout
- 3.3.3 Mixing and Placing
- 3.3.4 Treatment of Exposed Surfaces
- 3.3.5 Curing

-- End of Section Table of Contents --

## SECTION 02442

## NAVIGATION AID STRUCTURES

## PART 1 GENERAL

## 1.1 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Grout Plan; GA.

A detailed plan shall be submitted for approval, showing equipment and procedures for use in mixing and placing the grout. In addition, descriptive literature of the grout proposed for use shall be furnished together with a certificate from the manufacturer stating that it is suitable for the application or exposure for which it is being considered.

## PART 2 PRODUCTS

## 2.1 MATERIALS

## 2.1.1 Concrete

The Contractor shall provide a concrete mat foundation for the new Navigation Aid structure. Materials shall conform to the following requirements.

## 2.1.1.1 Portland Cement

ASTM C 150, Type I or Type II.

## 2.1.1.2 Ready Mix Concrete

ASTM C 94.

## 2.1.1.3 Aggregate

ASTM C 33, 1-1/2 inch maximum.

## 2.1.1.4 Reinforcement

ASTM A 615, Grade 60.

## 2.1.1.5 Forms

Forms may be wood or metal but shall be sufficiently rigid to confine uncured concrete to the required shape.

#### 2.1.1.6 Curing Compound

Type I, Class A, ASTM C 309.

#### 2.1.2 Steel

##### 2.1.2.1 Anchor Bolts

7/8 inch diameter, 12 inch length J-bolt with 3-1/2 inch minimum thread length, Type I, ASTM A 449.

##### 2.1.2.2 Nuts

Heavy hex, Grade C, ASTM A 563.

##### 2.1.2.3 Washers

All washers shall be circular, carbon steel, ASTM F 436.

#### 2.1.3 Nonshrink Grout

Nonshrink grout shall conform to ASTM C 1107 and shall be a commercial formulation suitable for the application proposed.

### 2.2 CONCRETE MAT FOUNDATION

#### 2.2.1 Strength

Concrete shall have a strength of at least 3,000 psi at 28 days. Minimum cement content shall be 6 sacks per cubic yard. Slump shall not exceed 4-inches, and shall be tested in accordance with ASTM C 143 test method.

#### 2.2.2 Mixing

Concrete mixing may be accomplished by any of the following methods, subject to the limitations indicated.

##### 2.2.2.1 Mixer

Site mixer shall have a minimum mixing time of 20 minutes after water has been added.

##### 2.2.2.2 Central Plant

Central plant mix with truck haul. Mixing time from the central plant to truck discharge at site shall have a maximum elapsed time of one hour.

##### 2.2.2.3 Water

When approved by the Contracting Officer, water may be added at the jobsite if the total amount was not initially batched and the amount of water added

does not exceed the mix design batch proportions. The water shall be injected into the mixer under pressure, and the drum or blades turned a minimum of 30 additional revolutions at the mixing speed. There shall be no further addition of water to the batch.

#### 2.2.2.4 Calcium Chloride

Addition of calcium chloride is not permitted.

#### 2.2.3 Reinforcement

All reinforcing bars, together with all necessary wire ties, chairs, spacers, and supports shall be securely fastened to prevent displacement before or during placement of concrete. Reinforcing shall be clean and free of flaky rust, mill scale and other coatings.

### PART 3 EXECUTION

#### 3.1 CONSTRUCTION FABRICATION

##### 3.1.1 General

The structure shall not be erected on the concrete slab until the concrete has cured a minimum of 7 days. Before placement, verify actual location of the bolt holes in the steel base plate and coordinate with placement of the anchor bolts as necessary. Provide leveling nuts and washers to adjust plumb of structure, and grout beneath the base plate after the leveling is completed. Non-shrink grout shall be used.

##### 3.1.2 Approval

No concrete shall be placed until the Contracting Officer has approved forms, reinforcing steel, and anchor bolts.

##### 3.1.3 Cold Joints

Concrete shall be placed in forms free of debris and in a continuous pour without cold joints.

##### 3.1.4 Vibration

Uniformity of concrete density and freedom from voids shall be accomplished by internal mechanical vibration. Vibrators shall not be used to move concrete within the forms.

##### 3.1.5 Curing

Concrete shall be protected from the elements and kept moist for 5 days if Type I cement is used and for 3 days if Type III cement is used. Liquid membrane-forming compound shall be applied to the concrete after the forms are stripped, to provide additional curing.

#### 3.2 FINISHING

### 3.2.1 Surface

The concrete surface shall be steel-trowel finished.

### 3.2.2 Stripping

Upon stripping the forms from the concrete, the concrete surfaces shall be free from voids, rock pockets or other obvious imperfections.

## 3.3 SETTING OF BASE PLATE

### 3.3.1 General

After being plumbed and properly positioned, the steel pipe pile plate shall be provided with full bearing with nonshrink grout. The concrete surface shall be rough, clean, and free of oil, grease, and laitance, and shall be damp. Metal surfaces shall be clean and free of oil, grease, and rust.

### 3.3.2 Nonshrink Grout

Nonshrink grout shall conform to the requirements of paragraph: Nonshrink Grout. Water content shall be the minimum that will provide a flowable mixture and completely fill the space to be grouted without segregation, bleeding, or reduction of strength.

### 3.3.3 Mixing and Placing

Mixing and placing shall be in conformance with the material manufacturer's instructions and as specified therein. Ingredients shall be thoroughly dry mixed before adding water. Batches shall be of size to allow continuous placement of freshly mixed grout. Grout not used within 30 minutes after mixing shall be discarded. The space between the top of the concrete and the plate shall be filled solid with the grout. Forms shall be of wood or other equally suitable material for retaining the grout and shall be removed after the grout has set. The placed grout shall be worked to eliminate voids; however, overworking and breakdown of the initial set shall be avoided. Grout shall not be retempered or subjected to vibration from any source. Where clearances are unusually small, placement shall be under pressure with a grout pump. Temperature of the grout, and of surfaces receiving the grout, shall be maintained at 65 to 85 degrees F until after setting.

### 3.3.4 Treatment of Exposed Surfaces

Those types containing metallic aggregate shall have, after the grout has set, the exposed surfaces cut back 1 inch and immediately covered with a parge coat of mortar proportioned by weight of one part Portland cement, two parts sand, and sufficient water to make the mixture placeable. The parge coat shall have a smooth, dense finish. The exposed surface of other types of nonshrink grout shall have a smooth, dense finish.

### 3.3.5 Curing

Grout and parge coats shall be cured in conformance with paragraph: Curing.

-- End of Section --