

Cheverus High School
Washington Avenue
Athletic Facility

Portland, Maine

Project No. 00146

March 30, 2001



PROJECT MANUAL
 FOR
 CHEVERUS HIGH SCHOOL
 WASHINGTON AVENUE ATHLETIC FACILITY
 PORTLAND, MAINE
 TABLE OF CONTENTS

TITLE	NO. OF PAGES
BIDDING REQUIREMENTS	
00020 - Invitation to Bid	1
00100 - Instructions to Bidders	1 - 2
00200 - Information Available to Bidders	1
00300 - General Contractor Bid Form	1 - 2
CONTRACT FORMS	
Standard Form of Agreement Between Owner and Contractor (AIA Document A101 - 1997 Edition)	1 - 7
Performance Bond (AIA Document A312)	1 - 3
Payment Bond (AIA Document A312)	4 - 6
Application and Certificate for Payment (AIA Document G702) and Continuation Sheets (AIA Document G703)	1 - 2
Certificate of Substantial Completion (AIA Document G704)	1
Contractor's Affidavit of Payment of Debts and Claims (AIA Document G706)	1
Contractor's Affidavit of Release of Liens (AIA Document G706A)	1
Consent of Surety to Final Payment (AIA Document G707)	1
CONDITIONS OF THE CONTRACT	
General Conditions of the Contract for Construction (AIA Document A201 - 1997 Edition)	1 - 40
00800 - Supplementary General Conditions	1 - 3

TITLE

NO. OF PAGES

SPECIFICATIONS

Division 1 thru 16 inclusive

DIVISION 1 - GENERAL REQUIREMENTS

01010 - Summary of Work	1 - 2
01027 - Applications for Payment	1 - 3
01030 - Alternates	1
01040 - Coordination	1 - 3
01095 - Reference Standards and Definitions	1 - 3
01200 - Project Meetings	1 - 3
01300 - Submittals	1 - 6
01400 - Quality Control	1 - 3
01500 - Construction Facilities and Temporary Controls	1 - 5
01600 - Materials and Equipment	1 - 3
01630 - Substitutions and Product Options	1
01700 - Contract Closeout	1 - 4
01710 - Cleaning	1 - 2
01740 - Warranties and Bonds	1 - 2

DIVISION 2 - SITE WORK

02060 - Demolition	1 - 4
02200 - Earthwork	1 - 10
02270 - Slope Protection and Erosion Control	1 - 7
02500 - Paving and Surfacing	1 - 2
02660 - Water Distribution	1 - 5
02700 - Sewerage and Storm Drainage	1 - 4
02800 - Site Improvements	1 - 4
02810 - Irrigation System	1 - 13
02820 - Tennis Courts	1 - 2
02930 - Lawns and Grasses	1 - 7
02950 - Trees, Plants, and Ground Covers	1 - 9

DIVISION 3 - CONCRETE

03300 - Cast-In-Place Concrete	1 - 2
--------------------------------	-------

DIVISION 4 - MASONRY

04200 - Unit Masonry	1 - 10
----------------------	--------

DIVISION 5 - METALS: STRUCTURAL AND MISCELLANEOUS

05500 - Metal Fabrications	1 - 3
----------------------------	-------

DIVISION 6 - CARPENTRY

06100 - Rough Carpentry	1 - 6
06200 - Finish Carpentry	1 - 5

TITLE	NO. OF PAGES
DIVISION 7 - MOISTURE PROTECTION	
07310 - Asphalt Shingles	1 - 3
07900 - Joint Sealants	1 - 5
DIVISION 8 - DOORS, WINDOWS AND GLASS	
08110 - Steel Doors and Frames	1 - 6
08360 - Sectional Overhead Doors	1 - 3
08710 - Finish Hardware	1 - 9
DIVISION 9 - FINISHES	
09900 - Painting	1 - 7
DIVISION 10 - SPECIALTIES	
10800 - Toilet Accessories	1 - 2
DIVISION 11 - EQUIPMENT	
Not Used	
DIVISION 12 - FURNISHINGS	
Not Used	
DIVISION 13 - SPECIAL CONSTRUCTION	
Not Used	
DIVISION 14 - CONVEYING SYSTEMS	
Not Used	
DIVISION 15 - MECHANICAL	
See drawings	
DIVISION 16 - ELECTRIC	
See drawings	

LIST OF DRAWINGS

DATED

COVER SHEET

C10.1	EXISTING CONDITIONS AND DEMOLITION PLAN	3/30/01
C20.1	SITE PLAN	3/30/01
C30.1	SITE GRADING & EROSION CONTROL PLAN	3/30/01
C40.1	SITE UTILITIES PLAN	3/30/01
C40.2	SITE BALLFIELD IRRIGATION PLAN	3/30/01
C50.1	SITE DETAILS	3/30/01
C50.2	SITE DETAILS	3/30/01
L10.1	PLANTING PLAN	3/30/01
A10.1	PLAN, SECTION AND ELEVATIONS UTILITY BLDG	3/30/01
P10.1	PLUMBING FLOOR PLANS LEGEND AND SCHEDULE	3/30/01
E10.1	ELECTRICAL PLAN, LEGENDS DETAILS, SPECIFICATIONS AND SCHEDULES	3/30/01

HARRIMAN ASSOCIATES

One Auburn Business Park
Auburn, Maine 04210

207.784.5100 telephone
207.782.3017 fax
www.harriman.com

Building communities
since 1870

A D D E N D U M

Date April 19, 2001
From Harriman Associates
To Prospective Bidders
Re Addendum No. 1 to the Bidding Documents for:

Cheverus High School
Washington Avenue Athletic Facility
Portland, Maine

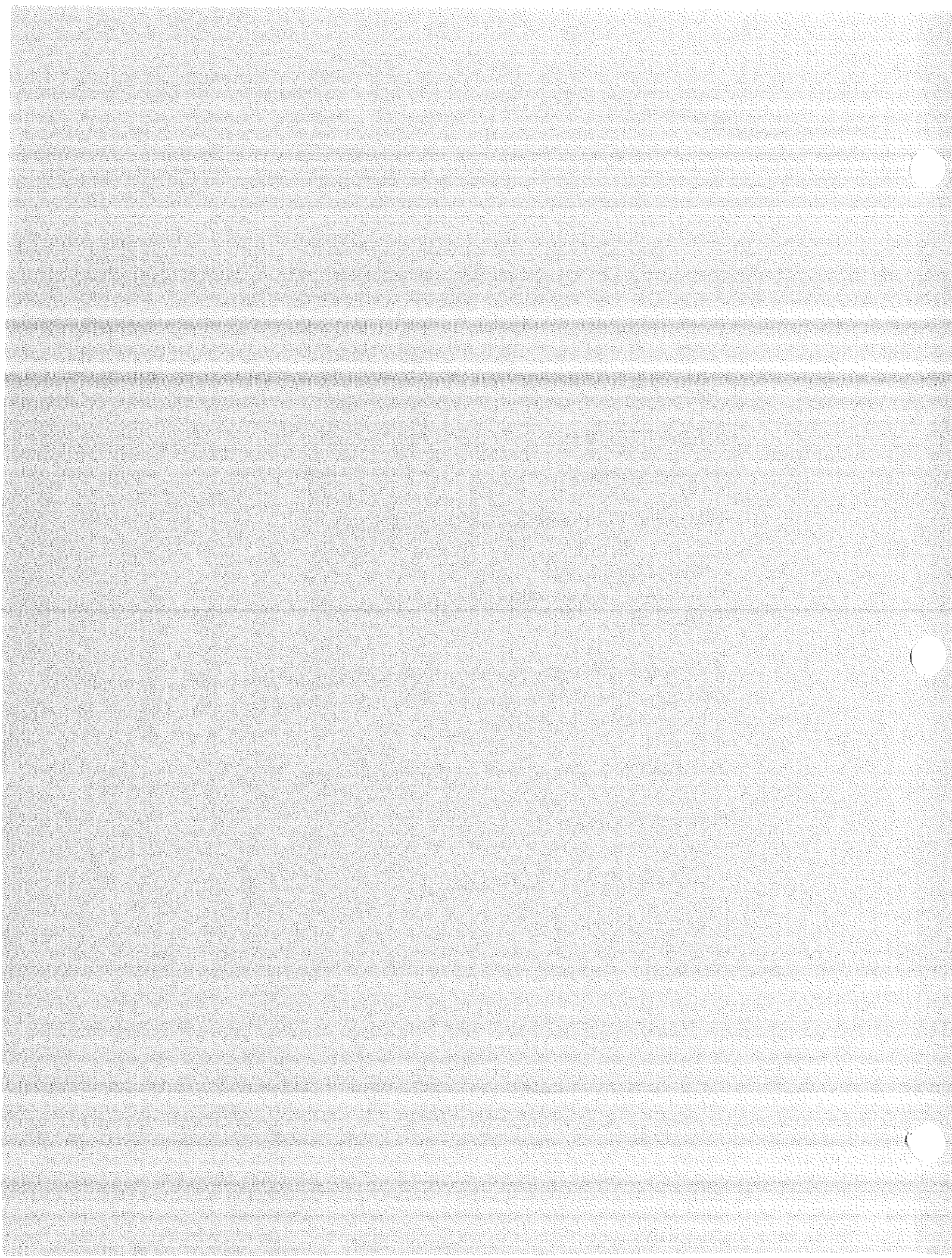
This Addendum forms a part of the Contract Documents and modifies the original Bidding documents dated March 30, 2001. Acknowledge receipt of this Addendum in the space provided in the Bid Form.

This Addendum consists of 19 pages and Drawing Nos. SKA1, SKA2, and SKA3.

Harriman Associates

Edward A. Cormier,

Edward A. Cormier, P.E.
President



CLARIFICATION:

1. Cheverus High School is tax exempt.

CHANGES TO BIDDING DOCUMENTS:

1. SECTION 00020 - INVITATION TO BID
 - a) Page 1, Revise bid date as follows: "...no later than Thursday, April 26, 2001 at 1:30 p.m."

- PART 2. SECTION 00300 - GENERAL CONTRACTOR BID FORM
 - a) Issued with this addendum

2. SECTION 01027 - APPLICATIONS FOR PAYMENT
 - a) Page 1, Item 1.03 B, add the following:
 - "9. Identify the concrete bridge abutment costs, shown on the attached drawings SKA2 and SKA3, as a separate line item in the schedule of values."

3. SECTION 01030 - ALTERNATES
 - a) Page 1, Item 3.01, add the following:
 - "B. Alternate No. 2 - Substitute a 6" surface layer of Reclaimed Bituminous Base material in place of the 6" gravel base on the new gravel drive and turnaround along the north side of the softball/soccer field. See Section 02200."

CHANGES TO SPECIFICATIONS:

1. SECTION 02200 - EARTHWORK

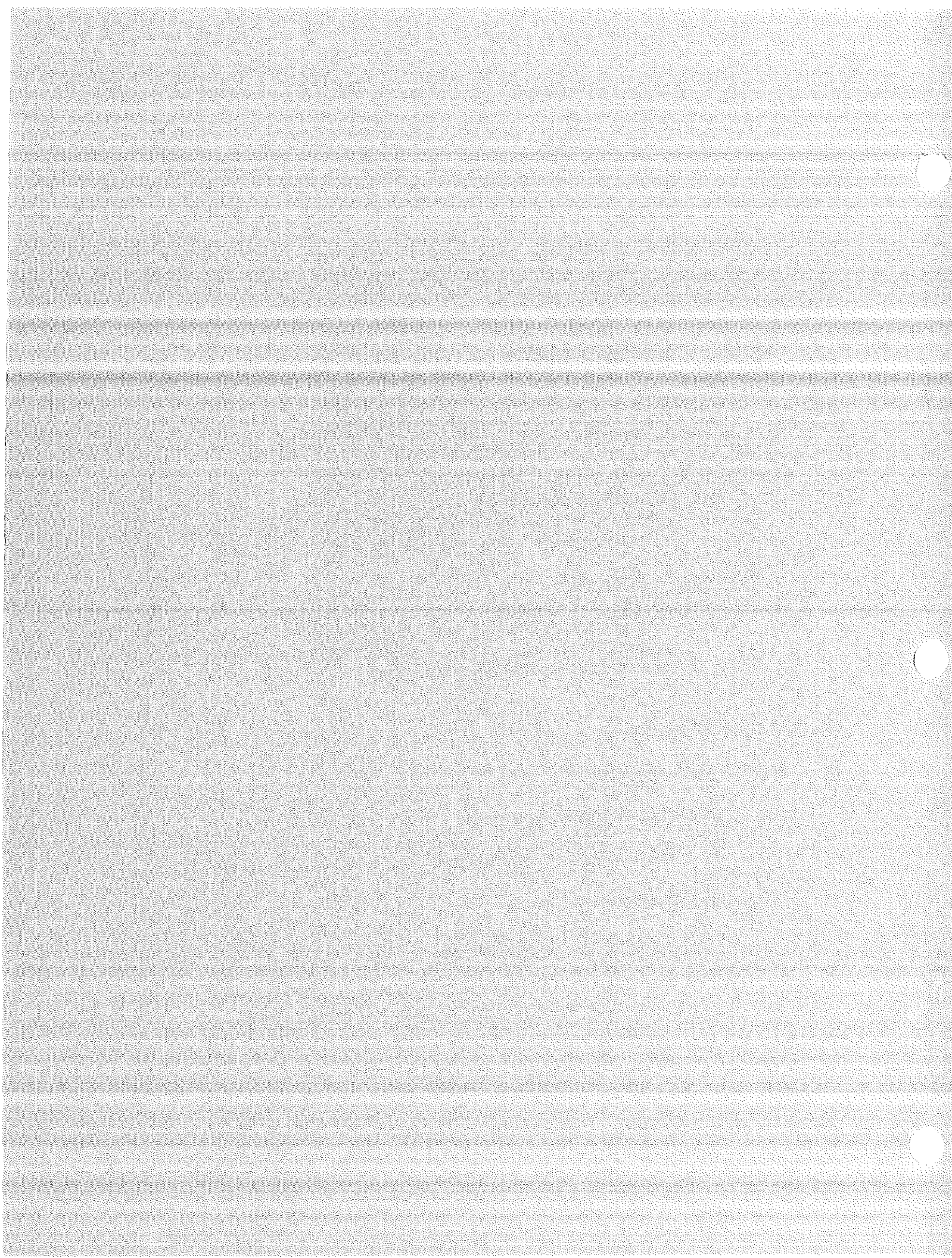
- a) Page 5, Item 2.06, add the following:

"C. Heavy Rip-Rap: 12" to 18" wide sound stones with flat top surface, d50 = 11".

- b) Page 6, add the following items:

"2.13 RECLAIMED STABILIZED BASE

- A. Provide reclaimed pulverized bituminous pavement and gravel base material in lieu of gravel base course on gravel drive and turnaround.



- B. Reclaimed stabilized base shall consist of 50% to 70% pulverized pavement and 30% to 50% clean gravel and shall conform to the following gradation:

SIEVE SIZE	PERCENT PASSING BY WEIGHT
2"	100
1"	80 - 100
3/4"	55 - 90
#4	25 - 70
#200	0 - 7

- C. The minimum bitumen content of the finished mix shall be 3%; utilizing the bitumen contained in the reclaimed pulverized pavement."

- c) Page 9, Item 3.07 C, add the following:

"5. Reclaimed Bituminous Stabilized Base:

1. Provide reclaimed stabilized base in lieu of gravel base course on gravel drive and turnaround.
2. Pulverize bituminous pavement together with the clean portion of the underlying base course or additional gravel base. The pulverizing operation shall blend the pavement and base course into a homogeneous mass, utilizing the bitumen contained in the pavement as a stabilizer. The quantity of gravel mixed with the pavement shall be adjusted as necessary to meet the material specification.
3. Process the reclaimed stabilized base utilizing scarifying equipment and a traveling hammermill or other approved reclaimers. Equipment such as a milling machine or a rock crushing plant will not be permitted.
4. Apply water as needed, for the purpose of dust control and to ensure proper compaction. Water may be added during fine grading to improve workability.
5. Place and compact to the same requirements as gravel base course.
6. Excess material, unless specified otherwise, shall become the property of the Contractor."

2. SECTION 02800 - SITE IMPROVEMENTS

- a) Page 1, Item 2.02 B - Chain Link Fence: Delete the following sentence, "All components shall be polyvinyl coated to match fabric."
- b) Page 2, Item 2.02 C - Chain Link Fence: Delete all reference to "Bottom Rails".
- c) Page 2, Item 2.02 D - Chain Link Fence: Delete all reference to "Fence Post Drive Anchors".
- d) Page 3, Item 2.04 D, - Exterior Signs: Add the following, "Wooden signs shall be cedar, painted with two prime coats and three finish coats. Letters shall be routed and painted; colors to be selected by Owner."
- e) Page 3, Item 3.01 C - Post Installation: Delete all reference to "steel drive anchors".



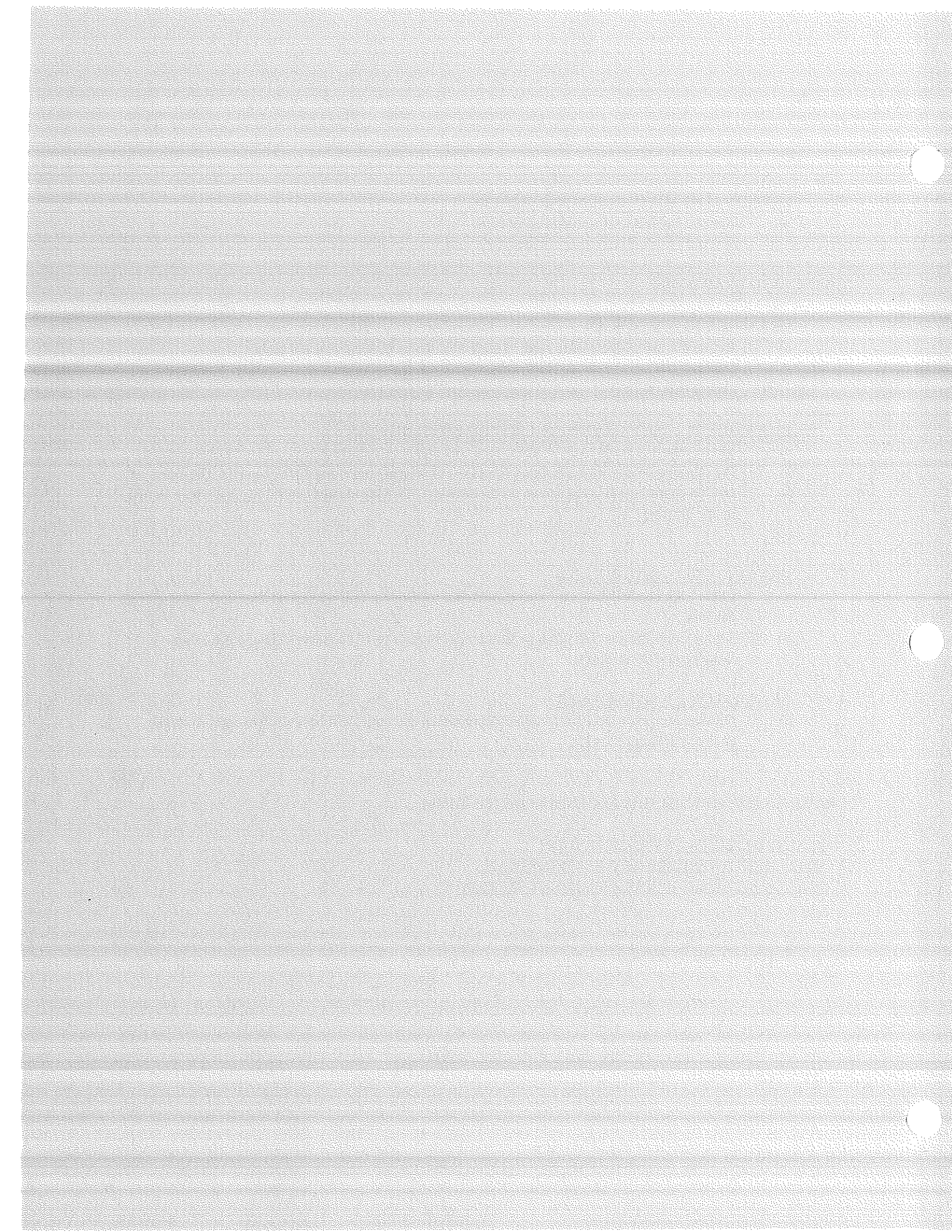
3. SECTION 03300 - CAST IN PLACE CONCRETE
 - a) Revised and reissued with this addendum.

CHANGES TO DRAWINGS:

1. DRAWING C20.1 - SITE PLAN
 - a) Revise the footbridge note to read, "Future 96' long by 6' wide steel and timber footbridge(N.I.C.). Provide Northwest concrete bridge abutment in this contract. Southeast abutment is (N.I.C.)."
2. DRAWING C30.1 - SITE GRADING & EROSION CONTROL PLAN
 - a) Revise note 3 to read: "Add 4" loam, seed, and mulch to disturbed areas unless otherwise noted. Provide erosion control mesh on all slopes 6:1 or steeper, and along ditch channels. The extent of erosion control mesh is not shown on the drawing. Provide erosion control blanket where shown on the drawing."
3. DRAWING C50.1 - SITE DETAILS
 - a) Chain Link Fence Detail, B1: Delete reference to "Bottom rail" and "Steel shoe and 2 steel drive anchors".
 - b) Tennis Court Section, E2: Change Bituminous Surface to 1" thickness. Change Bituminous Binder to 1-1/2" thickness.
4. DRAWING C50.2 - SITE DETAILS
 - a) Oil/sand Separator Detail, C1: Orientation of inlet and outlet will be revised to conform to the enclosed drawing SKA1.

DRAWINGS ISSUED WITH THIS ADDENDUM DATED 4-19-01

1. SKA1 - VORTECH'S UNIT ORIENTATION
2. SKA2 - NORTHWEST BRIDGE ABUTMENT PLAN
3. SKA3 - NORTHWEST BRIDGE ABUTMENT SECTION



SECTION 00300

GENERAL CONTRACTOR BID FORM

CHEVERUS HIGH SCHOOL
WASHINGTON AVENUE ATHLETIC FACILITY
PORTLAND, MAINE

To: _____

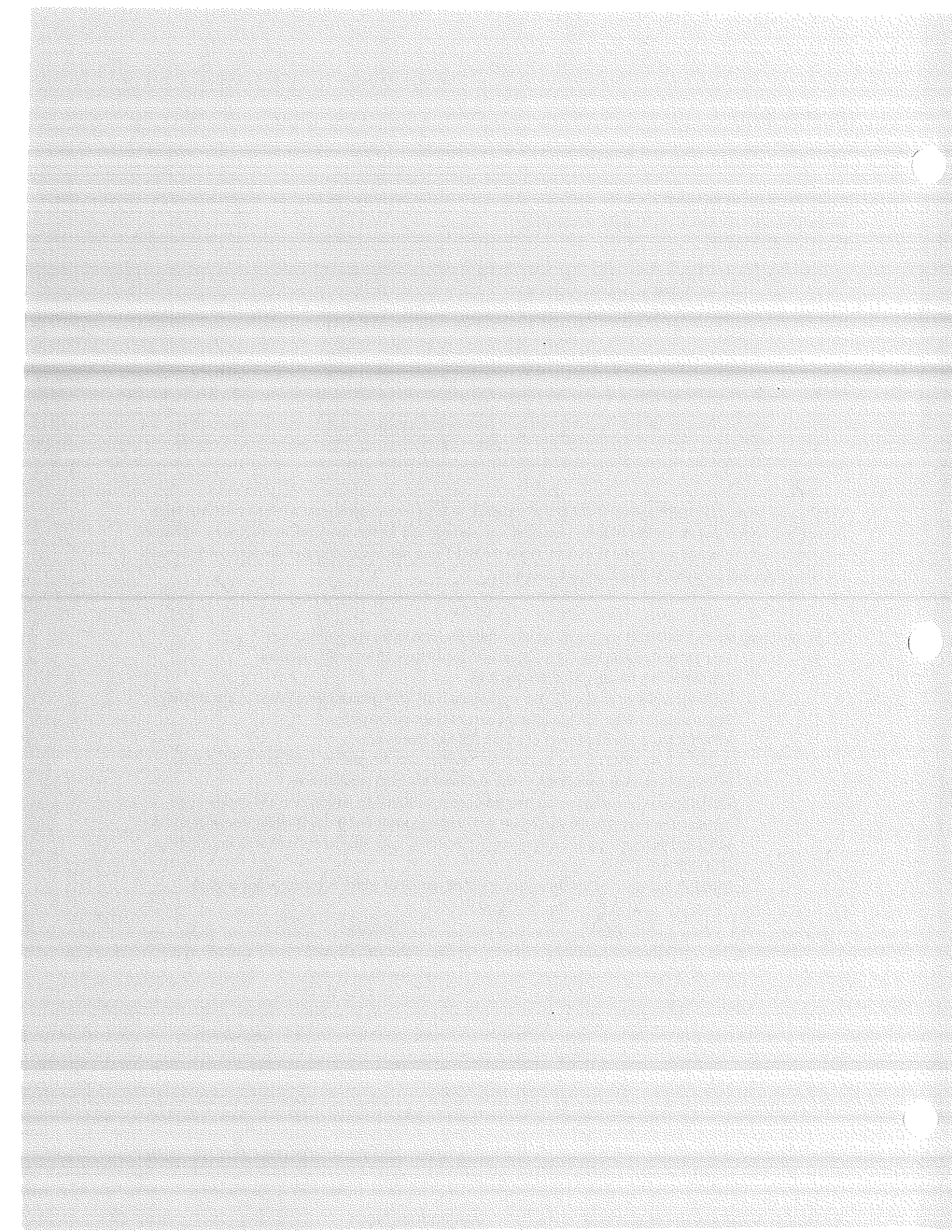
From: _____

1. The undersigned BIDDER agrees, if this Bid is accepted, to enter into an agreement with the Cheverus High School, in the form included in the Bidding Documents, to perform and furnish the Work as specified or indicated in the Bidding Documents for the Bid Price and within the Bid Times indicated in the Bid and in accordance with the other terms and conditions of the Contract Documents.

2. In submitting the Bid, BIDDER represents, as more fully set forth in the Agreement, that:

- . This Bid will remain subject to acceptance for 30 days after the Bid opening:
- . The Owner has the right to reject this Bid:
- . BIDDER will sign and submit the Agreement with other documents required by the Bidding Requirements within 15 days after the date of Notice of Award:
- . BIDDER has examined copies of all the Bidding Documents:
- . BIDDER has visited the site and become familiar with the general, local and site conditions:
- . BIDDER is familiar with federal, state and local laws and regulations:
- . BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, report and drawings identified in the Bidding Documents and additional examination, investigations, explorations, tests, studies and data with the Bidding Documents:
- . BIDDER has received the following Addenda receipt of which is hereby acknowledged:

Date	Number
_____	_____
_____	_____
_____	_____
_____	_____



3. BIDDER will complete the Work in accordance with the Contract Documents for the following Lump Sum price:

_____ (\$ _____)

Alternate No. 1 - Beam Clay Infield Surface ADD _____

Alternate No. 2 - Reclaimed Bituminous Base ADD _____

4. Unit Prices: The undersigned agrees to perform additional work as ordered or to allow for work ordered omitted in accordance with the following Unit Prices. Unit Prices will be applied to the net change in final quantities of work involved. The deduct price will be the same as the add.

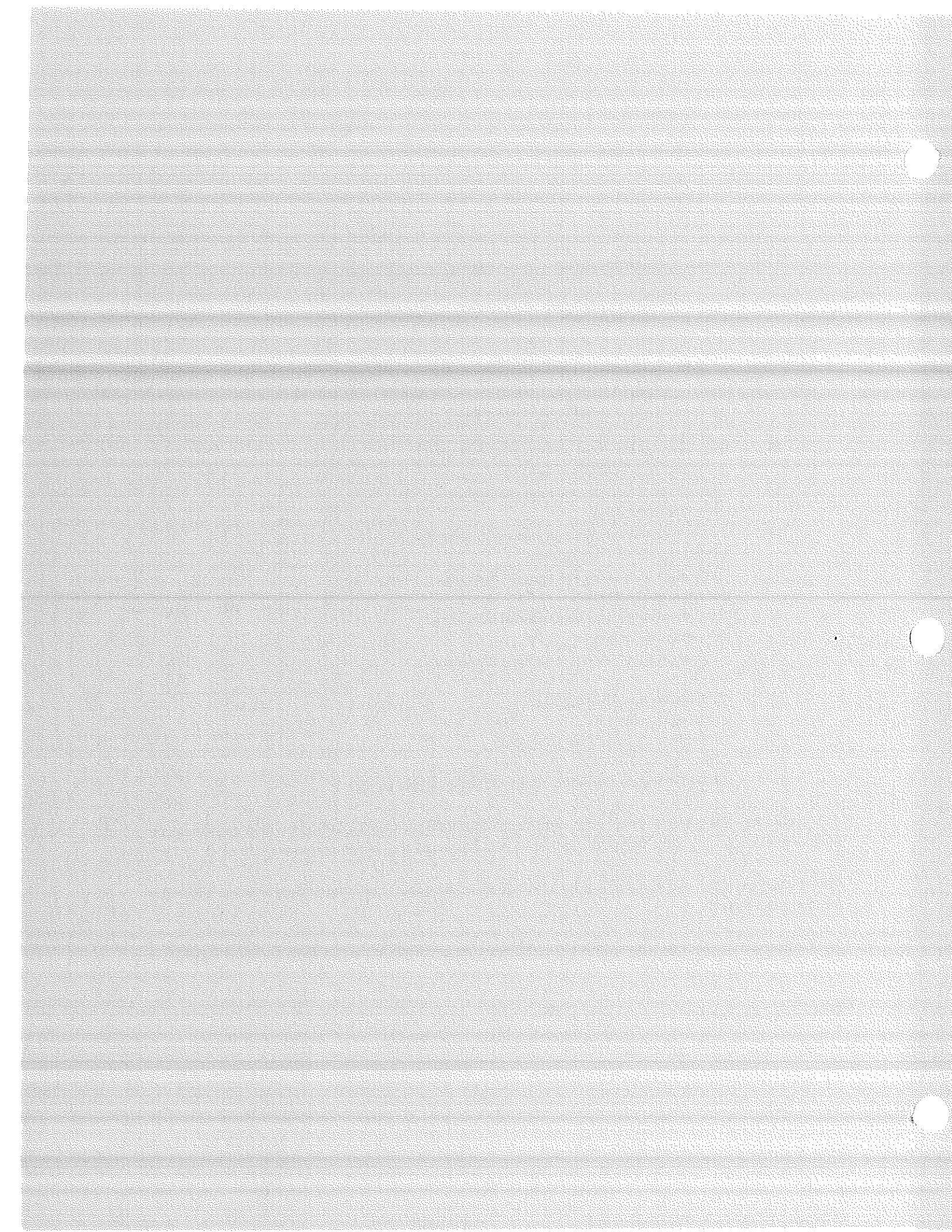
- a) Excavation and backfill with excavated material - per cubic yard (in place) - open. \$ _____
- b) Excavation of material and removal from site - per cubic yard - open \$ _____
- c) Excavation and backfill with excavated material - per cubic yard (in place) trench \$ _____
- d) Excavation of material and removal from site - per cubic yard - trench \$ _____
- e) Rock excavation, including removal from site - per cubic yard - open \$ _____
- f) Rock excavation, including removal from site - trench \$ _____
- g) Granular borrow fill and backfill - in place per cubic yard \$ _____
- h) Gravel base, in place - per cubic yard \$ _____
- i) Gravel sub base, in place - per cubic yard \$ _____
- j) 3000 psi concrete (including forms and stripping) per cu. yd. \$ _____

5. The undersigned agrees to complete the project on or before September 14, 2001, or within the equivalent number of calendar days if the start of the project work is delayed by the Owner beyond the start date.

This Bid may be withdrawn at any time prior to the scheduled time for the opening of Bids or any authorized postponement thereof.

The Owner reserves the right to reject this bid in the event that any items of the Bid Form are not complete.

Date _____ By _____



SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install cast-in-place concrete work.

1.02 SUBMITTALS

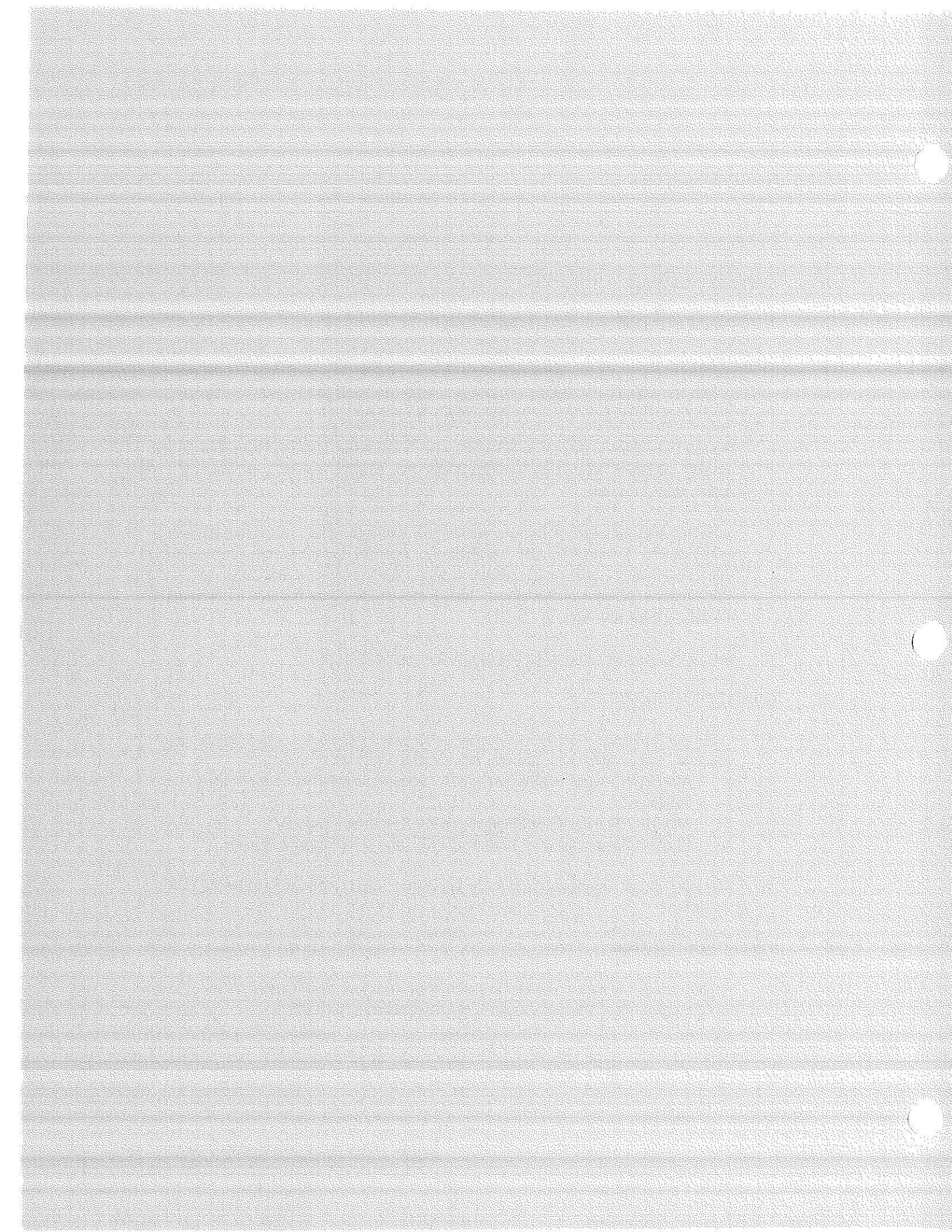
- A. General: Submit the following in accordance with Section 01300.
- B. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, curing compounds, and others if requested by Architect.
- C. Shop Drawings: Show reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.
- D. Submit locations for construction and control joint layout for walls.

1.03 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
 - 1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
 - 2. ACI 318, "Building Code Requirements for Reinforced Concrete."
 - 3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."
- B. Concrete Testing: Testing will be paid for by the Owner. Field technician shall be MCTCB certified.

1.04 PROJECT CONDITIONS

- A. Apply surface evaporation retardant to slab surface when water loss reaches .15 lbs of water loss per square foot (.6 kg per sm) per hour as determined in ACI 308.



PART 2 PRODUCTS

2.01 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Form Release Agent: Provide commercial formulation form release agent with a maximum of 350 g/L volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- D. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches (38 mm) to the plane of the exposed concrete surface.
 - 1. Provide ties that, when removed, will leave holes not larger than 1 inch (25 mm) in diameter in the concrete surface.

2.02 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- B. Steel Wire: ASTM A 82, plain, cold-drawn steel.
- C. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- D. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.
 - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2.03 CONCRETE MATERIALS

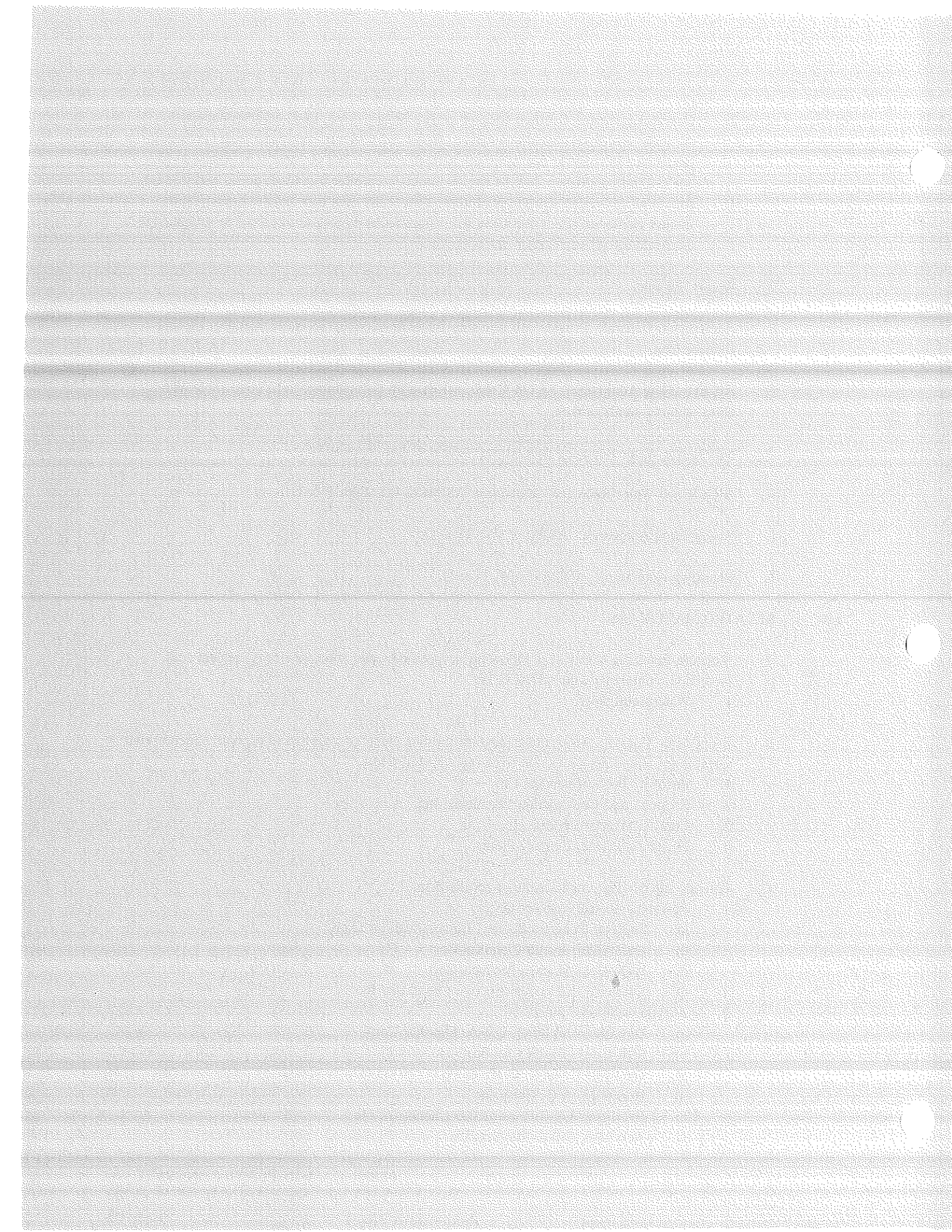
- A. Portland Cement: ASTM C 150, Type II.
 - 1. Use one brand of cement throughout Project.
- B. Fly Ash: ASTM C 618, Type F.
- C. Concrete Aggregates: Shall conform to the requirements of ASTM C-33.
 - 1. Fine Aggregate: Sand shall consist of hard, tough and preferably siliceous material, clean, free from mineral or other coatings, soft particles, clay, loam or other deleterious matter.



2. Coarse Aggregate: Crushed stone or gravel, having clean, hard, durable, uncoated particles, free from deleterious matter. The 1-1/2"(38 mm) aggregate shall conform to gradation #467 and the 3/4"(19 mm) aggregate to size #67 in Table II of ASTM C-33. 3/4"(19 mm) aggregate shall be the minimum permissible size used, unless required for structural clearances between reinforcing bars or between bars and the forms require smaller aggregate size. Clearances requiring smaller aggregate size shall be submitted to the Architect for verification and approval.
- D. Water: Potable.
 - E. Admixtures, General: Provide concrete admixtures that contain not more than 0.01 percent chloride ions.
 - F. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
 - G. Mid-Range Water-Reducing Admixture: ASTM C 494, Type A.
 - H. High-Range Water-Reducing Admixture: ASTM C 494, Type F or G.
 - I. Accelerating Admixture: ASTM C 494, Type C.
 - J. Retarding Admixture: ASTM C 494, Type D.

2.04 RELATED MATERIALS

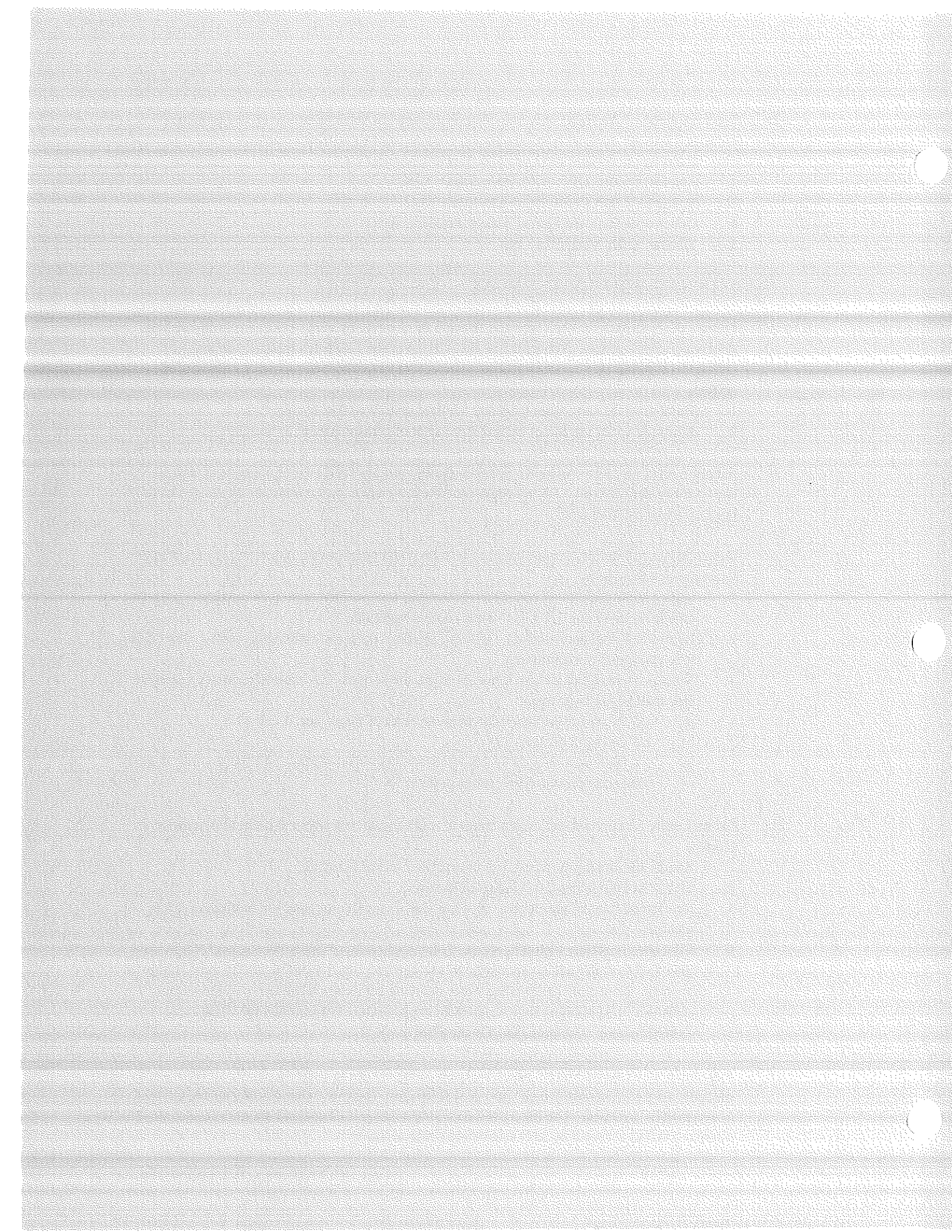
- A. Moisture-Retaining Cover: The following as specified under concrete curing, sealers and protection, complying with ASTM C 171.
 1. Waterproof paper.
- B. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.
 1. Eucobar; Euclid Chemical Co.
 2. E-Con; L&M Construction Chemicals, Inc.
 3. Confilm; Master Builders, Inc.
 4. Finisher's Friend; Century Floors.
- C. Bonding Agent: Polyvinyl acetate or acrylic base.
 1. Polyvinyl Acetate (Interior Only):
 - a) Superior Concrete Bonder, Dayton Superior Corp.
 - b) Euco Weld, Euclid Chemical Co.
 - c) Weld-Crete, Larsen Products Corp.
 - d) Everweld, L&M Construction Chemicals, Inc.
 2. Acrylic or Styrene Butadiene:
 - a) Day-Chem Ad Bond, Dayton Superior Corp.
 - b) SBR Latex, Euclid Chemical Co.
 - c) Daraweld C, W.R. Grace & Co.
 - d) Hornweld, A.C. Horn, Inc.
 - e) Everbond, L&M Construction Chemicals, Inc.
 - f) Acryl-Set, Master Builders Inc.



- D. Epoxy Adhesive: ASTM C 881, two-component material suitable for use on dry or damp surfaces. Provide material type, grade, and class to suit Project requirements.
1. Euco Epoxy System #452 or #620, Euclid Chemical Co.
 2. Epoxite Binder 2390, A.C. Horn, Inc.
 3. Epobond, L&M Construction Chemicals, Inc.
 4. Congresive Standard Liquid, Master Builders, Inc.
 5. Sikadur 32 Hi-Mod, Sika Corp.

2.05 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
1. Do not use the same testing agency for field quality control testing.
 2. Limit use of fly ash to not exceed 25 percent of cement content by weight.
- B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed by Architect.
- C. Design Mixes to Provide Normal Weight Concrete with the Following Properties as Indicated on Drawings and Schedules:
1. Slabs : 3000-psi, 28-day compressive strength; water-cement ratio 0.54 maximum, non-air-entrained, minimum 3/4 inch (19 mm) coarse aggregate.
 2. Reinforced Wall and Footings: 3000-psi, 28-day compressive strength; water-cement ratio, 0.54 maximum (air-entrained).
 3. Where coarse aggregate size is not specified, the nominal maximum size coarse aggregate size shall be not larger than:
 - a) 1/5 the narrowest dimension between sides of forms, nor;
 - b) 1/3 the depth of slabs, nor;
 - c) 3/4 the minimum clear spacing between individual reinforcing bars or wires, bundles of bars, or prestressing tendons or ducts.
- D. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
1. Ramps and sloping surfaces: Not more than 3 inches (75 mm).
 2. Slabs: Not more than 5-1/4 inches (130 mm).
 3. Reinforced foundation systems: Not less than 2 inch (50 mm) and not more than 5-1/4 inches.
 4. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than 8 inches after adding admixture to site-verified 2-to-5-inch (50-to-125 mm) slump concrete. Plant-added high-range water-reducing admixture is subject to approval by Architect. Use of high-range water-reducing admixture is prohibited for slabs.
 5. Other concrete: Not more than 4 inches (100 mm).
- E. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in Work.

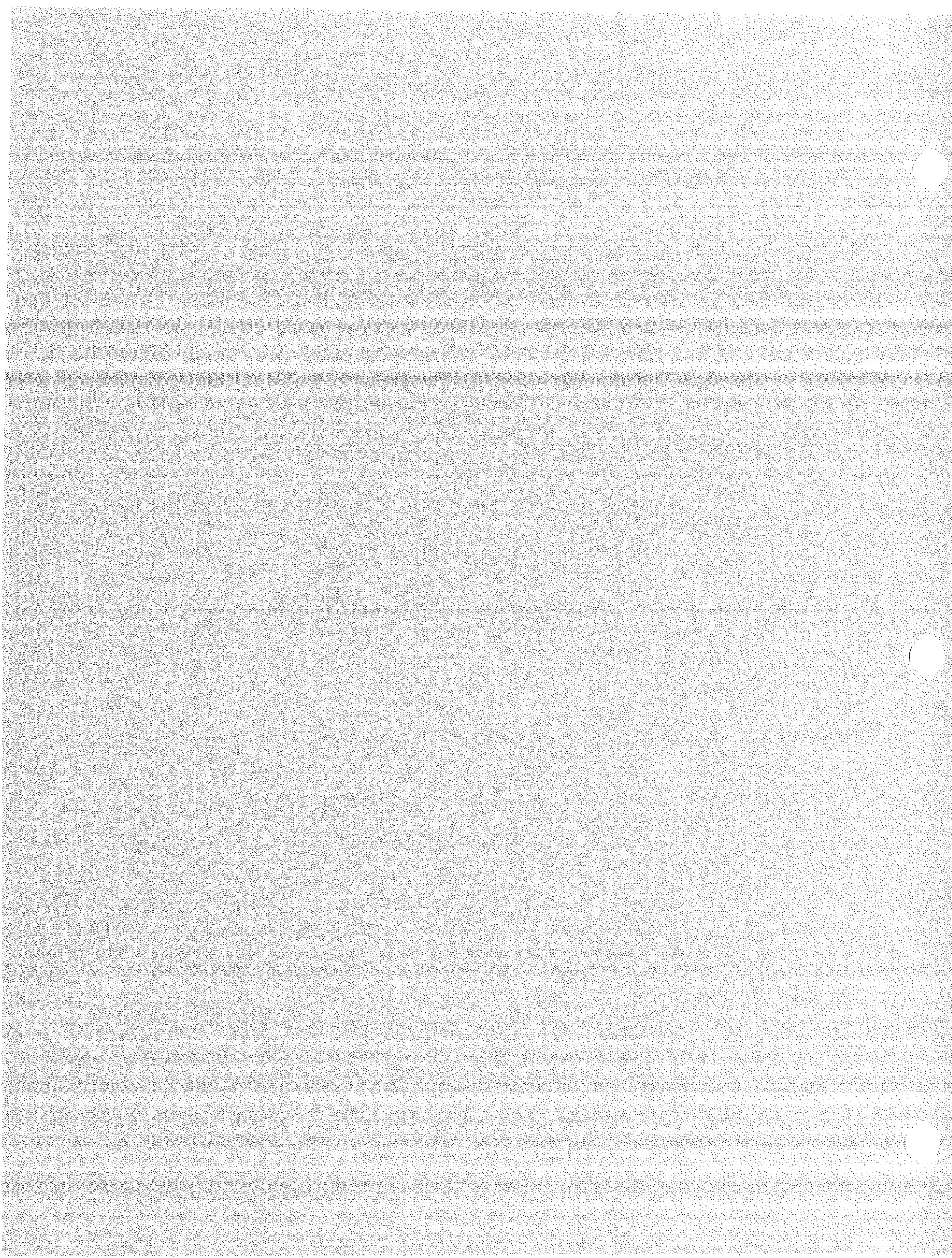


2.06 ADMIXTURES

- A. Use mid-range water-reducing admixture for all concrete. Add admixture at manufacturer's prescribed rate. Dosage shall not exceed 8 ounces per 100 pounds of cement.
- B. Accelerating admixture may be used in concrete slabs placed at ambient temperatures below 50°F (10°C).
- C. Retarding admixture may be used in concrete slabs placed at ambient temperatures above 80°F (27°C).
- D. High-range water-reducing admixture may be used for reinforced foundation systems. High-range water-reducing admixture is not permitted for use in slabs.
- E. The approved air-entraining admixture shall be used in concrete exposed to weather. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:
 - 1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:
 - a) 5.0 percent for 1-1/2-inch (38 mm) maximum aggregate.
 - b) 6.0 percent for 3/4-inch (19 mm) maximum aggregate.
 - c) 7.0 percent for 3/8-inch (9 mm) maximum aggregate.
- F. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

2.07 CONCRETE MIXING

- A. Job-Site Mixing: Mix concrete materials in appropriate drum-type batch machine mixer. For mixers of 1 cu. yd. or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than 1 cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. yd.
 - 1. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.
 - 2. Mix the concrete in quantities required for immediate use, and any which has developed initial set, or which does not reach the forms within 1-1/2 hours after water has been added, shall not be used.
 - 3. Mix all concrete by machine, having a capacity of not less than "one bag batch" of concrete.
 - 4. Ready-mixed concrete shall be mixed and delivered by the means and standards set forth by ASTM C-94.
 - 5. When concrete is mixed in a truck mixer loaded to its maximum rated capacity, the number of revolutions of the drums or blades at mixing speed shall be not less than 70 nor more than 100.
 - 6. When a truck mixer or agitator is used for transportation, complete placement within 1-1/2 hours or before the drum has revolved a total of 300 revolutions, whichever comes first, after the introduction of mixing water.



7. Measurements:
- a) By Weight: Only weighing equipment approved by the Architect shall be allowed. The equipment shall be platform-operated, and the weighing beam or dial shall be in full view of the operator. The equipment shall be capable of measurement within + 1% for the cement and water, + 2% for the aggregates, and + 3% for the admixtures. The cement and aggregates must be weighed by the weight.
 - b) By Volume: The admixtures shall be measured by volume. Water may be measured by weight or volume.
 - c) All Methods: The methods of measuring concrete materials shall be such that the proportion of water to cement can be accurately controlled during the progress of the work and easily checked at any time.
- B. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.
1. When air temperature is between 85°F (30°C) and 90°F (32°C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90°F (32°C), reduce mixing and delivery time to 60 minutes.
- C. When air temperature has fallen to or is expected to fall between 40°F (4°C) and 30°F (-1°C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 60°F (16°C) and not more than 80°F (27°C) at point of placement. When air temperature has fallen to or is expected to fall below 30°F (-1°C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 65°F (18°C) and not more than 80°F (27°C) at point of placement.
1. Do not use frozen materials or materials containing ice or snow.
 2. Do not use calcium chloride, salt, or other materials containing antifreeze agents.
- D. When Hot Weather Conditions Cause Concrete Temperatures to Exceed 90°F (32°C) Perform the Following Procedures:
1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90°F (32°C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Architect.

PART 3 EXECUTION

3.01 GENERAL

- A. Coordinate the installation of vapor retarder/barrier, joint materials, and other related materials with earthwork, placement of forms and reinforcing steel.

3.02 FORMS

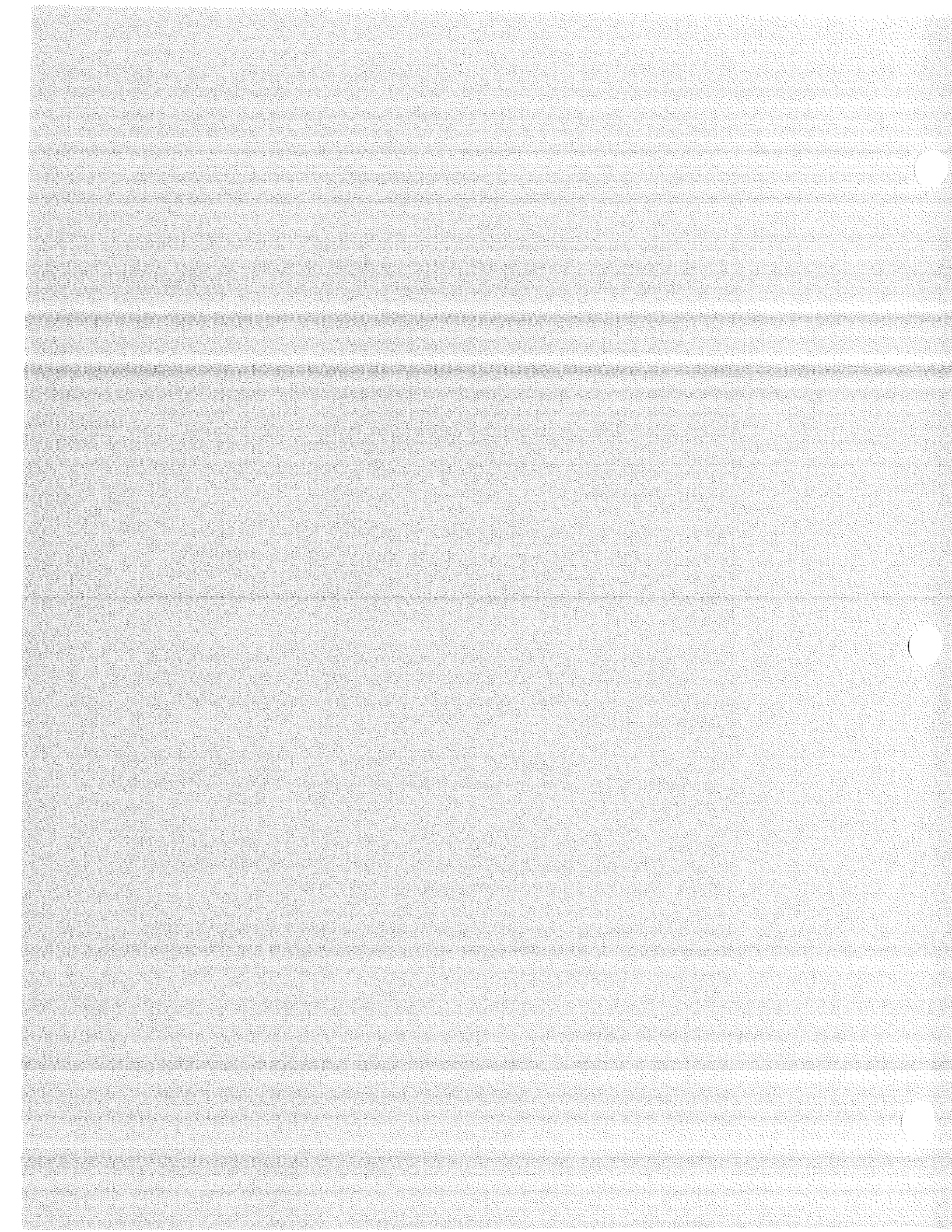
- A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with ACI 347 limits and as follows:



1. Surfaces exposed to view: Class A tolerance, checked with 5 foot template, except gradual irregularities not to exceed 1/4 inch (6 mm) and abrupt surface irregularities not to exceed 1/8 inch (3 mm).
 2. Other concrete surfaces: Provide Class C tolerances checked with 5 foot (1525 mm) template, with gradual irregularities not to exceed 1/2 inch (12 mm) and abrupt surface irregularities not to exceed 1/4 inch (6 mm).
 3. Variation of Linear Building Line: For position shown in plan, do not exceed 1/2 inch in 20 feet (12 mm in 6 m), nor 3/4 inch in 40 feet (19 mm in 12 m) or more.
 4. Variation of Cross-Sectional Dimension (thickness): 12 inch (305 mm) dimension or less, do not exceed 3/8 inch (10 mm) greater nor 1/4 inch (6 mm) less than indicated. 12 inch (305 mm) dimension but not over 3 foot (915 mm) dimension, do not exceed 1/2 inch (12 mm) greater nor 3/8 inch (10 mm) less than indicated.
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- E. Chamfer exposed corners and edges of beams, columns and partitions 1" unless otherwise noted, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.03 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.



- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Architect.
- D. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

3.04 JOINTS

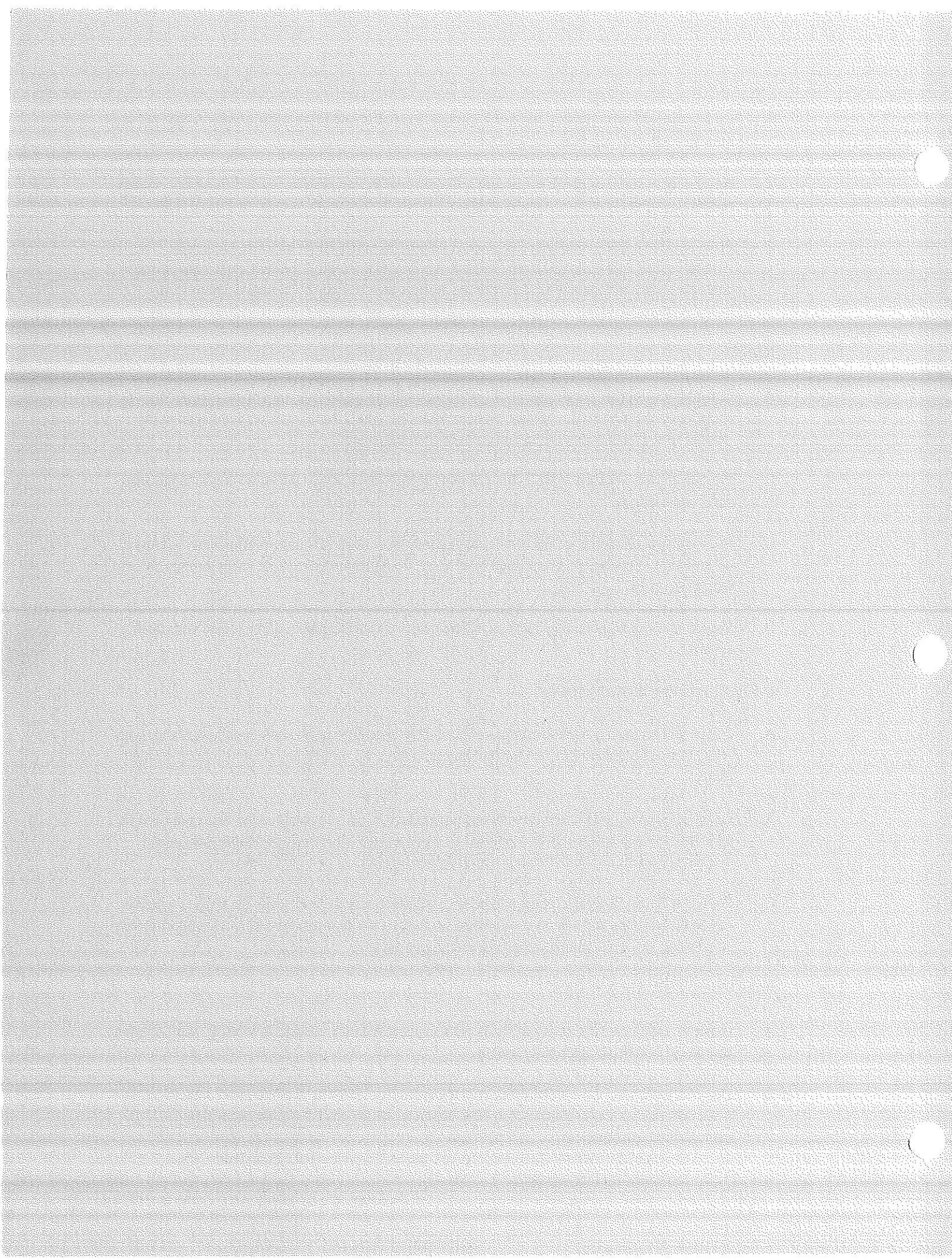
- A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure, as acceptable to Architect. Apply bond breaking compound to the vertical face of slab edge prior to adjacent concrete placement.
- B. Provide keyways at least 1-1/2 inches (38 mm) deep in construction joints in walls and between walls and footings.
- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.
- D. For foundations, use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

3.05 INSTALLING EMBEDDED ITEMS

- A. Locate and set anchor bolts for structural steel. Tolerance allowances shall be in accordance with AISC Code of Standard Practice for Buildings and Bridges, Installation of Bolts and Embedded Items.
- B. General: Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.
- C. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

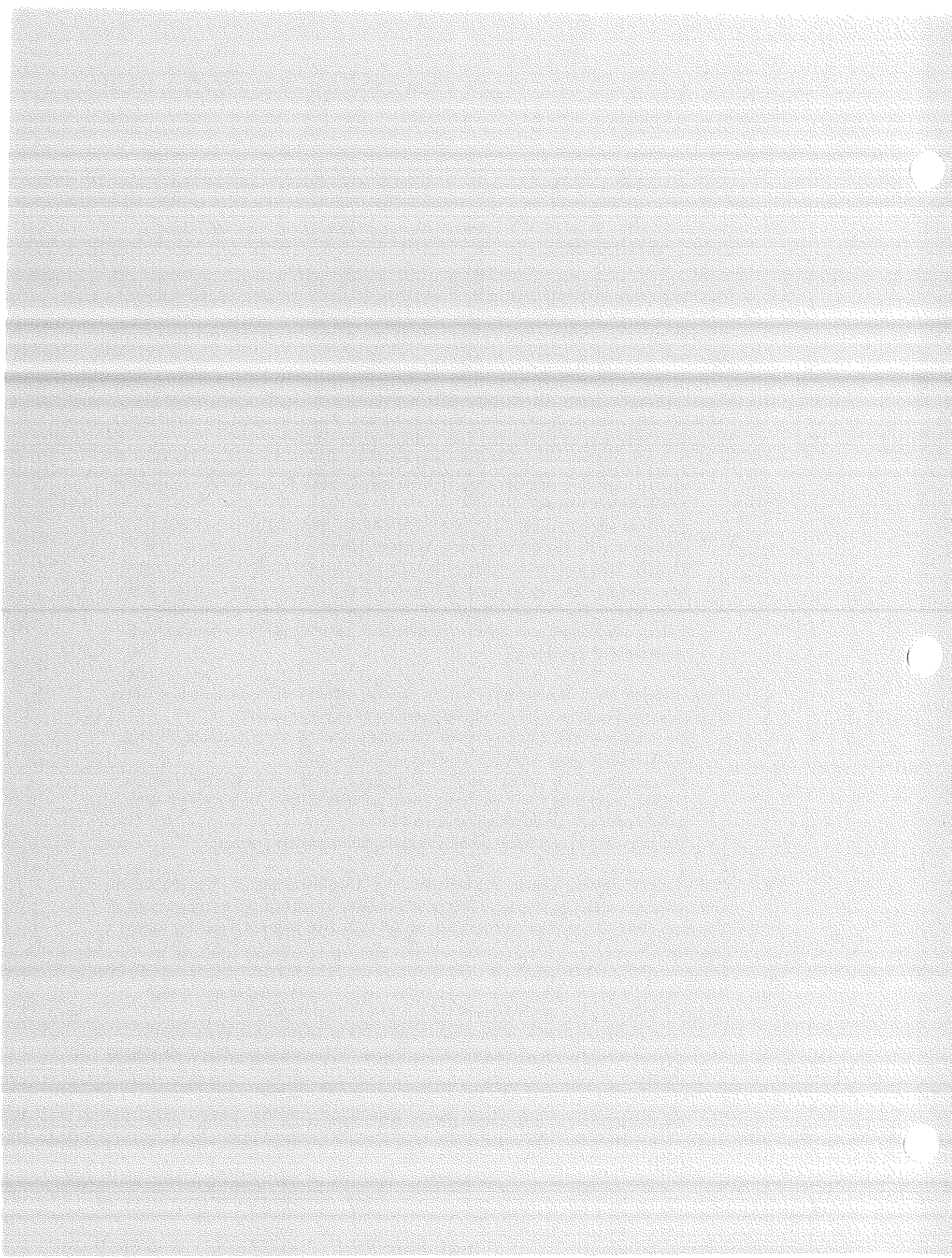
3.06 PREPARING FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.
- B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.
 - 1. Coat steel forms with a nonstaining, rust-preventative material. Rust-stained steel formwork is not acceptable.



3.07 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.
- D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches (152 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
 2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats and highway straightedge to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
 3. Maintain reinforcing in proper position on chairs during concrete placement.
- F. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
- G. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.
1. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 2. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.



3.08 FINISHING FORMED SURFACES

- A. **Rough-Formed Finish:** Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with ties removed and holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch (6 mm) in height rubbed down or chipped off.
- B. **Smooth-Formed Finish:** Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.
- C. **Related Unformed Surfaces:** At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.09 MONOLITHIC SLAB FINISHES

- A. **Float Finish:** Apply float finish to monolithic slab surfaces to receive trowel finish.
 - 1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, and when concrete has stiffened sufficiently to permit operation of power-driven floats. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. If pan floats are used, the first floating shall be done by power trowel with conventional float blades. Cut down high spots and fill low spots, using a highway straightedge as required to meet the floor flatness and levelness tolerances. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- B. **Trowel Finish:** Apply a trowel finish to monolithic slab surfaces exposed to view.
 - 1. After floating, begin first trowel-finish operation using a power-driven trowel. Consolidate concrete surface by final troweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 30 (floor flatness) and F(L) 20 (floor levelness) measured according to ASTM E 1155.

3.10 MISCELLANEOUS CONCRETE ITEMS

- A. **Filling In:** Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.



3.11 CONCRETE CURING AND PROTECTION

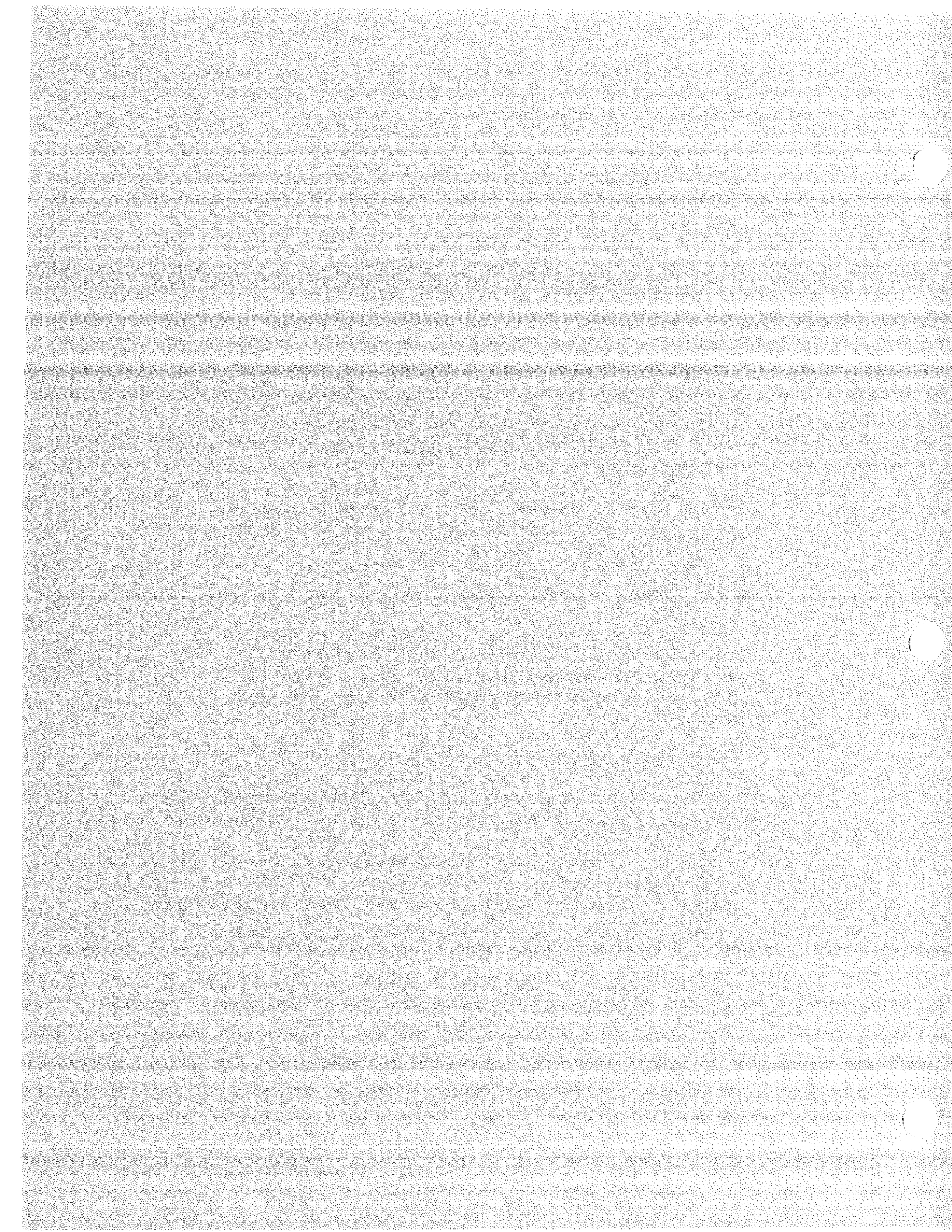
- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Keep continuously moist for not less than 7 days.
- C. Provide Moisture-retaining Cover Curing as Follows: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape. Weight down and maintain in intimate contact with the slab for the duration of the curing period.
 - 1. Cure exposed slabs with waterproof curing paper placed over slab that has been misted with water.
- D. The Contractor shall protect completed concrete work from damage by construction operations. Upon completion of the project, surfaces shall be cleaned of dirt and stains, including exterior flatwork, walks and pads.

3.12 REMOVING FORMS

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50°F (10°C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.
- B. Formwork supporting weight of concrete, such as beams and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
- C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports, and provided curing and protection operations are maintained.

3.13 REUSING FORMS

- A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces.

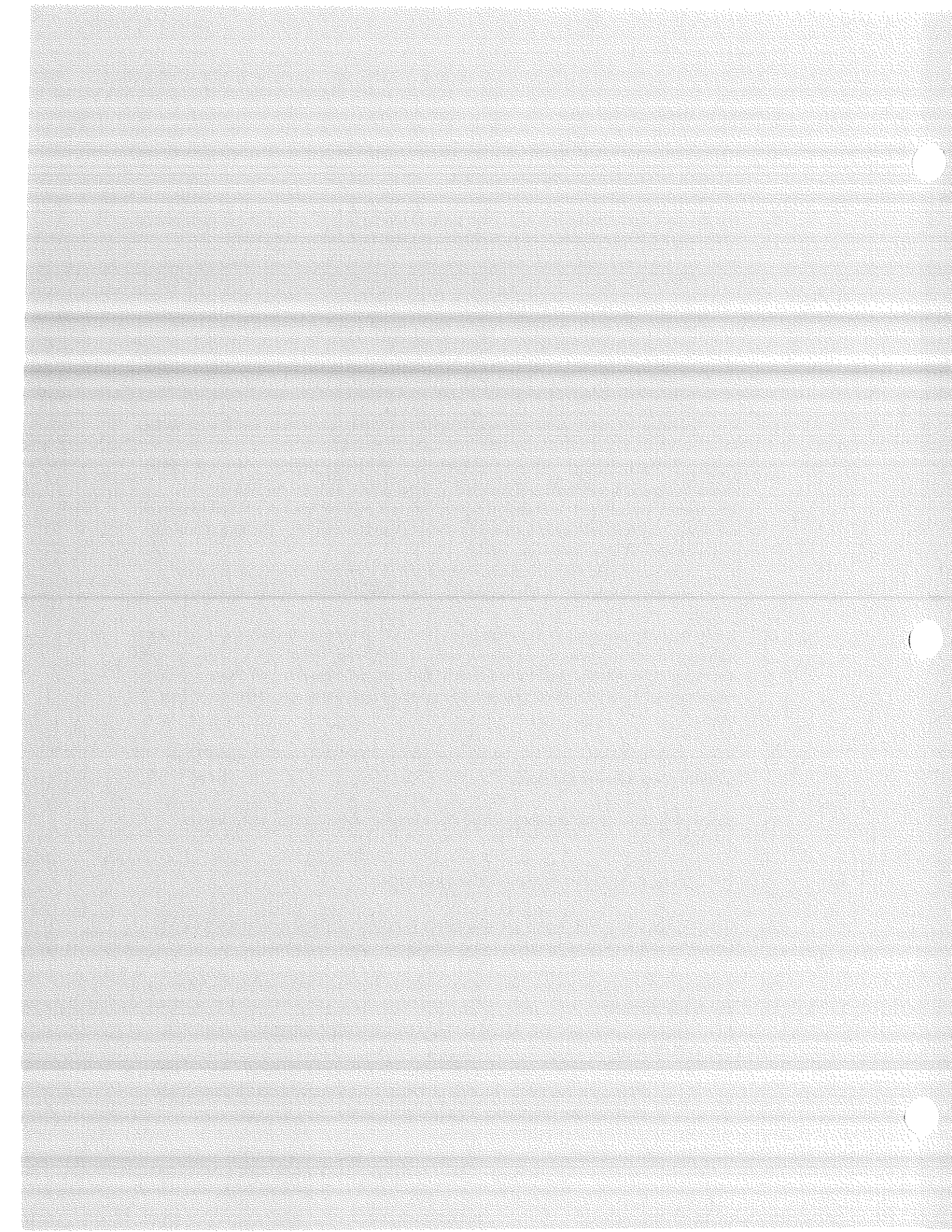


3.14 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to Architect.
- B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing.
 - 1. Cut out honeycombs, rock pockets, voids over 1/4 inch (6 mm) in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
 - 2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar.
 - 1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.
- D. Repair isolated random cracks and single holes 1 inch (25 mm) or less in diameter in accordance with methods recommended by the International Concrete Repair Institute (ICRI). Saw cut cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Place and finish repair material to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs with prior approval of Architect for method and procedure, using specified epoxy adhesive and mortar.
- F. Repair methods for conditions not specified above may be used, subject to acceptance of Architect.

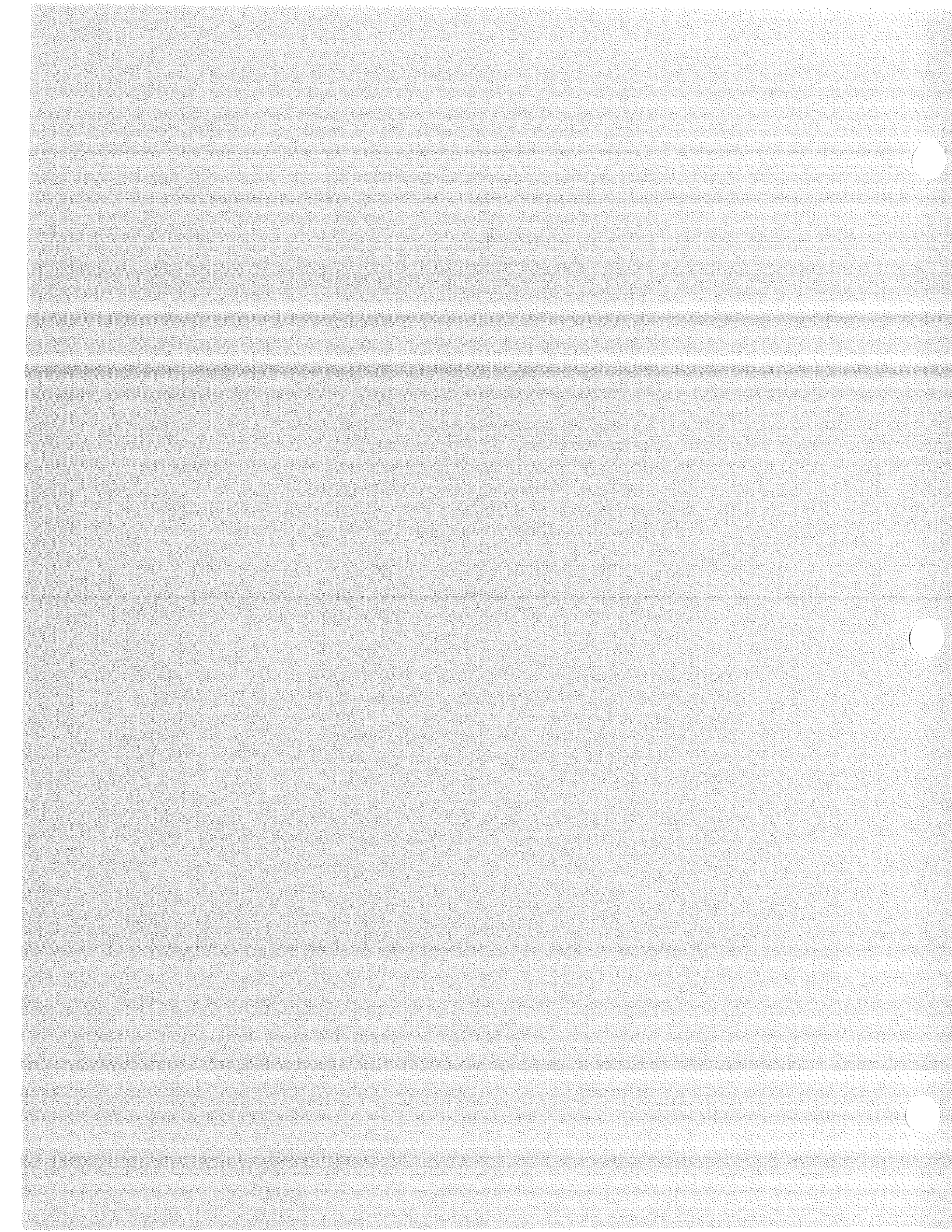
3.15 QUALITY CONTROL TESTING DURING CONSTRUCTION

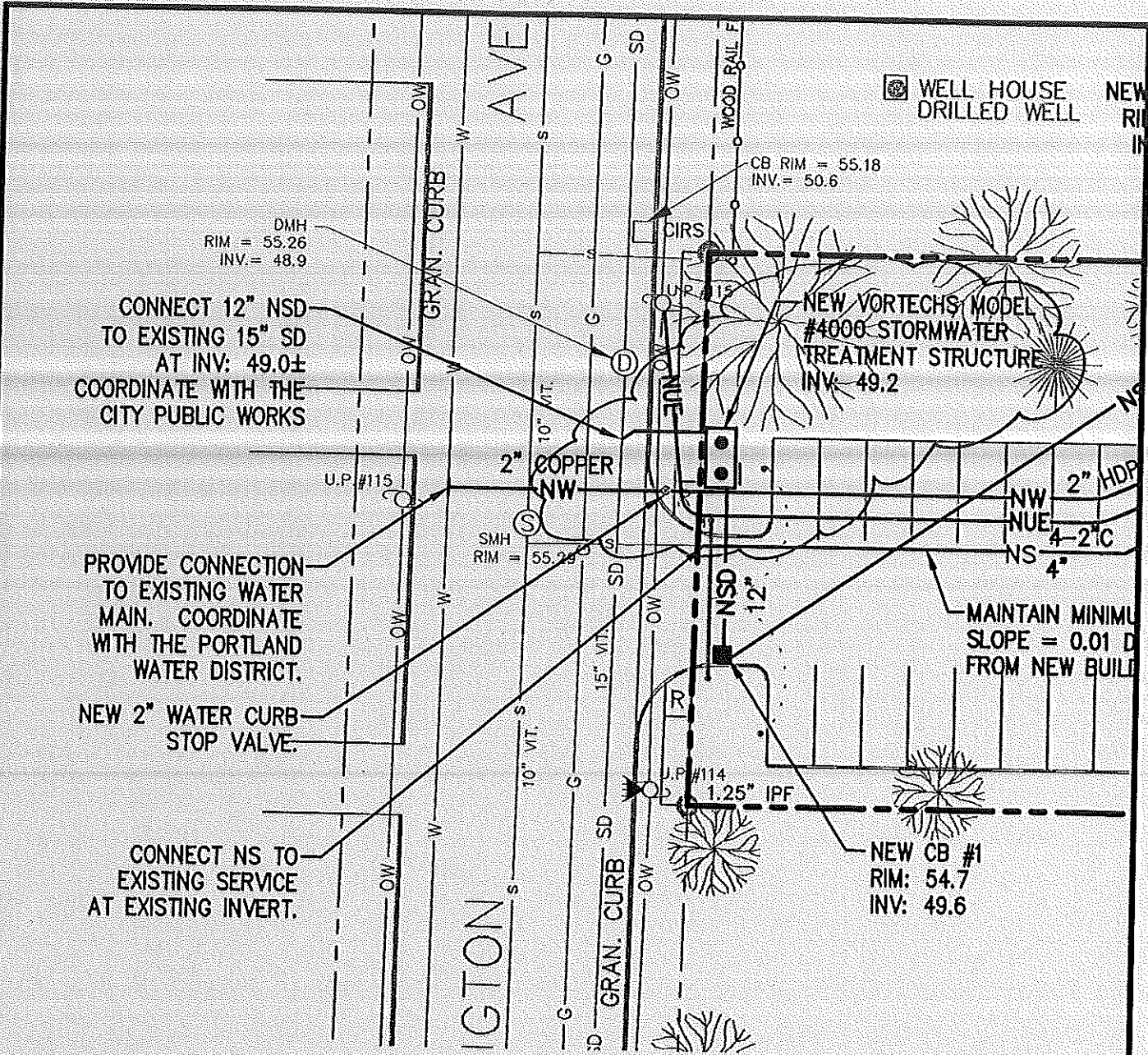
- A. General: The Owner will employ a testing agency to perform tests and to submit test reports. Contractor shall notify testing agency and coordinate testing for each pour.
- B. Sampling and testing for quality control during concrete placement may include the following, as directed by Architect.
 - 1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
 - a) Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; one test for each set of compression test specimens; additional tests when concrete consistency seems to have changed.



- b) Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete; one test for each set of compression test specimens of air-entrained concrete.
 - c) Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40°F (4°C) and below, when 80°F (27°C) and above, and one test for each set of compressive-strength specimens.
 - d) Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
 - e) Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yd. plus additional sets for each 50 cu. yd. more than the first 25 cu. yd. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required. For slabs on grade, test one specimen at 7 days, one specimen at 14 days, and two specimens at 56 days.
 - 2. When total quantity of a given class of concrete is less than 50 cu. yd., Architect may waive strength testing if adequate evidence of satisfactory strength is provided.
 - 3. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
 - 4. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).
- C. Test results will be reported in writing to Architect, ready-mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.
- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection. Core tests will be required.
- E. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION





DMH
RIM = 55.26
INV. = 48.9

CONNECT 12" NSD
TO EXISTING 15" SD
AT INV. 49.0±
COORDINATE WITH THE
CITY PUBLIC WORKS

PROVIDE CONNECTION
TO EXISTING WATER
MAIN. COORDINATE
WITH THE PORTLAND
WATER DISTRICT.

NEW 2" WATER CURB
STOP VALVE.

CONNECT NS TO
EXISTING SERVICE
AT EXISTING INVERT.

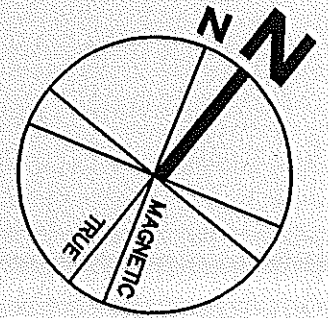
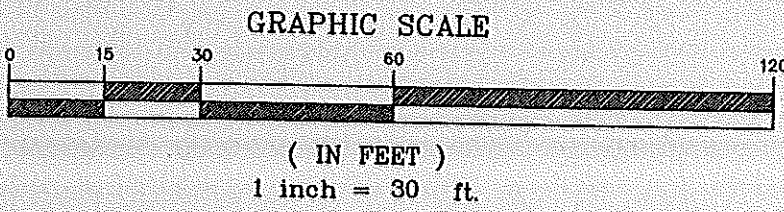
NEW VORTECH'S MODEL
#4000 STORMWATER
TREATMENT STRUCTURE
INV. 49.2

WELL HOUSE
DRILLED WELL

CB RIM = 55.18
INV. = 50.6

IGTON AVE

IGTON



VORTECH'S UNIT ORIENTATION

Scale 1" = 30'

Architects + Engineers

HARRIMAN ASSOCIATES

One Auburn Business Park
Auburn, Maine 04210
207.784.5100 tel
207.782.3017 fax

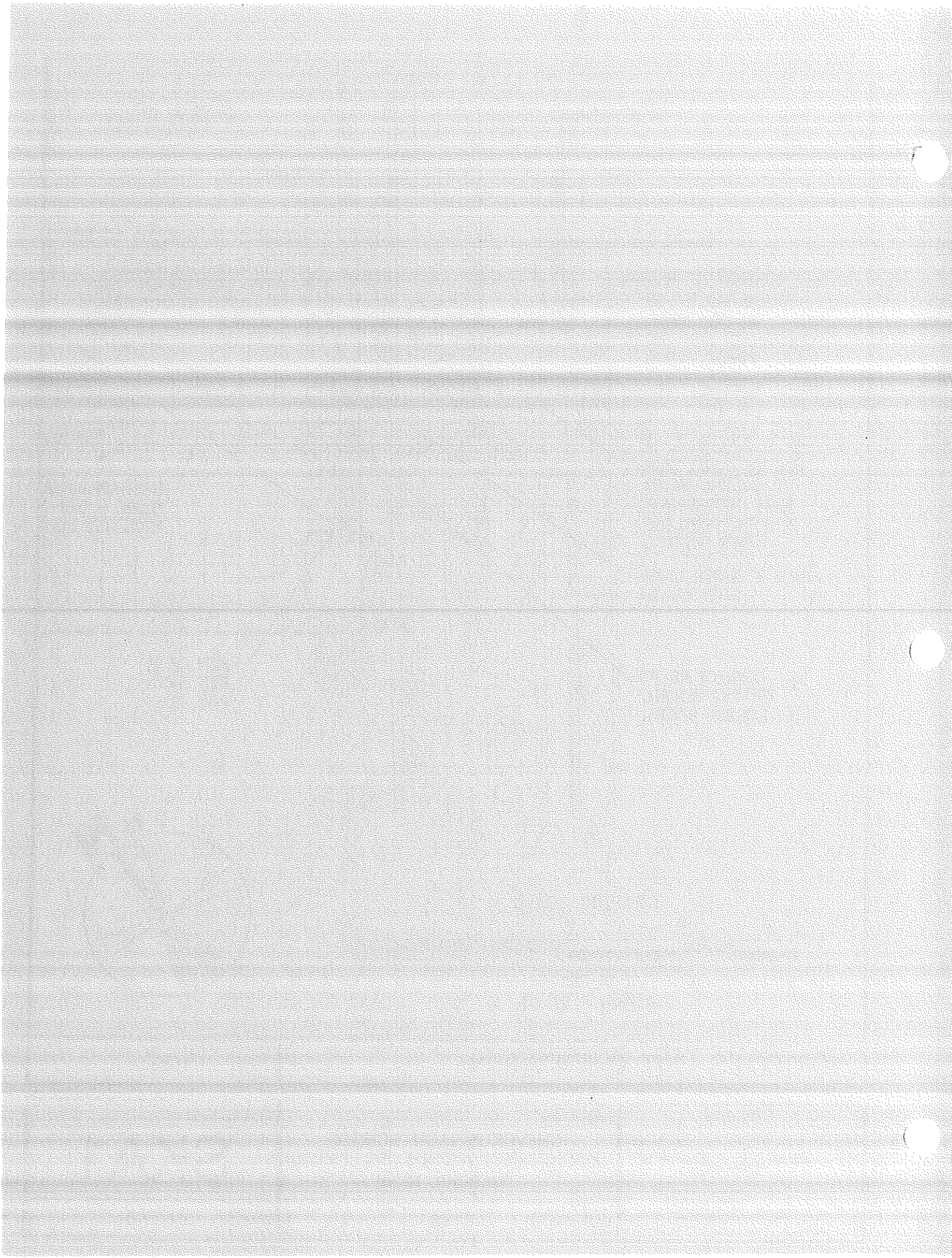
Project Title
**CHEVERUS HIGH SCHOOL
WASHINGTON AVENUE BALLFIELDS
PORTLAND, MAINE**

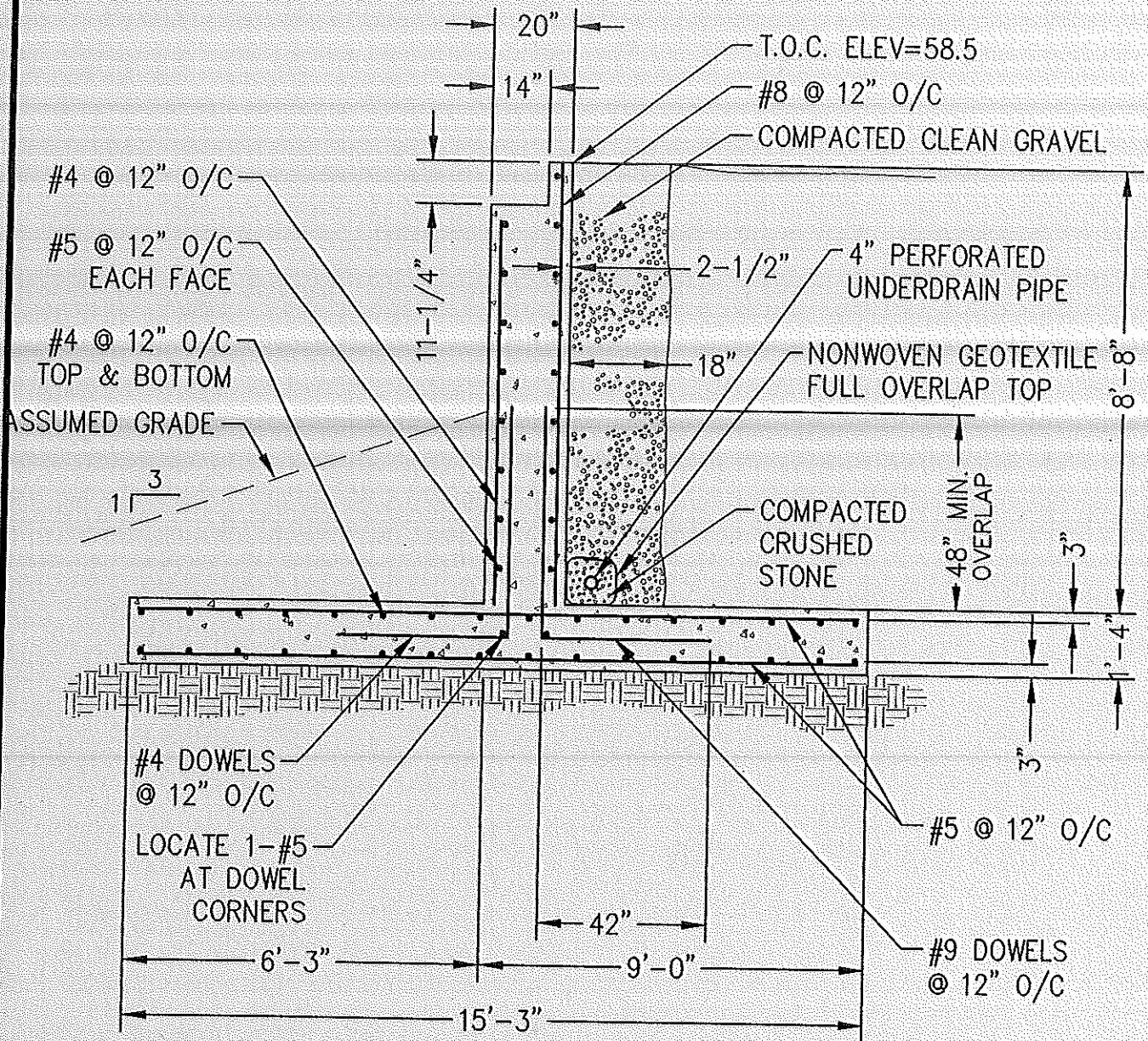
Drawing Number
SKA1

HA Project No. 00146

Date 04-19-01

Drawing: I:\School\00146\Civil\dwg\c_ska1.dwg Top=0youtl By=bfiber On=Wednesday, Apr. 18, 2001 - 11:15AM





SECTION A-A
N.T.S.

NOTE: PROVIDE 40 C.Y. OF HEAVY RIP-RAP AND GEOTEXTILE LAYER FOR ABUTMENT PROTECTION.

NORTHWEST BRIDGE ABUTMENT SECTION

Scale N.T.S.

Architects + Engineers
HARRIMAN ASSOCIATES

One Auburn Business Park
Auburn, Maine 04210
207.784.5100 tel
207.782.3017 fax

Project Title

**CHEVERUS HIGH SCHOOL
WASHINGTON AVENUE BALLFIELDS
PORTLAND, MAINE**

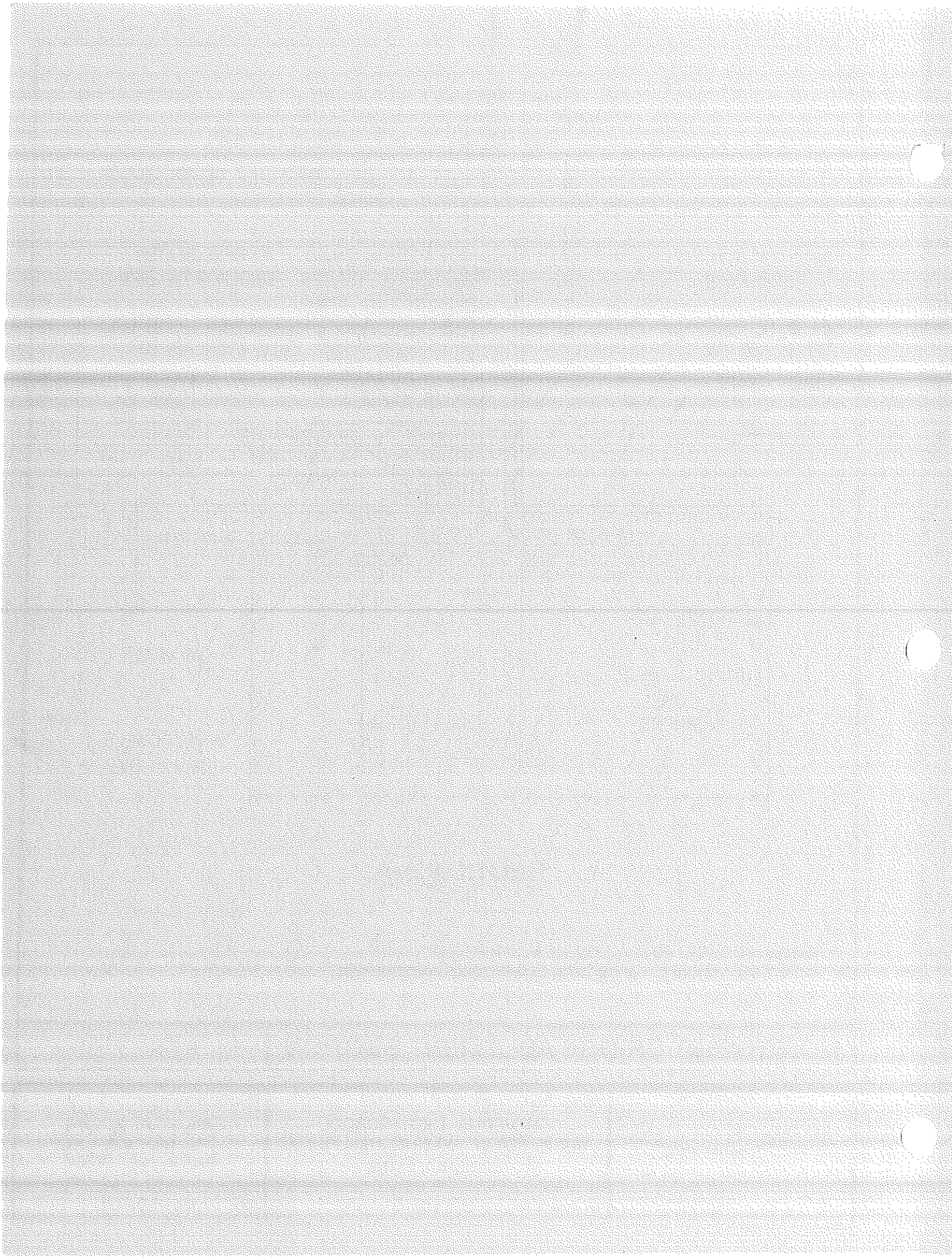
Drawing Number

SKA3

HA Project No. 00146

Date 04-19-01

Drawing=I:\school\00146\civil\dwg\sko3.dwg Tab=Layout1 By=jwhon On=Thursday, Apr. 19, 2001 - 3:29PM



INVITATION TO BID

CHEVERUS HIGH SCHOOL
WASHINGTON AVENUE ATHLETIC FACILITY
PORTLAND, MAINE

SEE ADDENDUM # 1

You are invited to submit a "Lump Sum" proposal for demolition and removal of several buildings and foundations, and the construction of an outdoor athletic complex. The work includes, but is not limited to, a baseball field, a softball field, an overlapping soccer field, six tennis courts, an underground irrigation system, a small paved parkinglot, and a masonry maintenance building with toilet rooms.

Project to be completed by Friday, September 14, 2001.

This proposal must be submitted, on the bid form, issued to:

Michael Komich
Business Manager
Cheverus High School
267 Ocean Avenue
P.O. Box 11559
Portland, Maine 04104

no later than Tuesday, April 24, 2001 at 1:30 p.m. Bids received after this time will not be accepted. Bids will be opened publicly and read aloud immediately after specified closing time at the Residence Hall at the Ocean Avenue campus. All interested parties are invited to attend.

Plans and Specifications may be obtained from: Harriman Associates, One Auburn Business Park, Auburn, Maine 04210. To obtain one set of plans and specifications by General Contractors and Subcontractors, enclose a check for \$70 Bidding General Contractors and Subcontractors who return plans and specifications unmarked and in good condition within 10 days of bid opening will receive one-half of their deposit upon returning the full set of plans and specifications. Contractors receiving plans, that do not bid, will receive no refund. Additional full sets and individual sheets of drawings and pages of specifications may be ordered by Subcontractors and material suppliers upon written request to the Architect and will be billed at the cost of reproduction, payable before issue, plus \$10.00 handling charge, upon which no refund will be made.

General Contract Proposals must be accompanied by a satisfactory Bid Bond for 5% of the Bid. The Owner reserves the right to waive all formalities, and reject any and all Bids or to accept any Bid. Bids shall be submitted upon the Form provided by the Architect.

The Selected General Contractor will be required to furnish a 100% Contract Performance Bond and a 100% Contract Payment Bond to cover the execution of the Work for the Contract Amount. Also required will be a separate performance guarantee to the City of Portland, covering the site improvement costs. The Contractor shall furnish all pertinent permits, including, but not limited to, building permit and street opening permit.

The Documents may be examined at the following places: F. W. Dodge Corp. at 47 Atlantic Place, South Portland, ME; at the office of Associated Constructors of Maine, Whitten Road, Augusta, ME; at the office of Harriman Associates, Architects-Engineers, One Auburn Business Park, Auburn, ME.

The Owner reserves the right to reject any or all bids.

A pre-bid meeting will be held at the site on Thursday, April 12, 2001 at 1:30 p.m. to review project scope and bid requirements and view the spaces to be renovated.

INSTRUCTIONS TO BIDDERS

1. RECEIPT AND OPENING OF BIDS.

See Section 00020 Invitation to Bid.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof, and may waive any informalities in, or reject, any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 30 days after the actual date of the opening thereof.

2. PREPARATION OF BID.

Bids shall be submitted on the prescribed form. All blank spaces for bid prices must be filled in, in ink, in both words and figures with the unit price for the item or the lump sum for which the bid is made.

All bids must be submitted in sealed envelopes, bearing on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope, containing the proposal and marked as directed above, must be enclosed in another envelope addressed as specified, preferably by registered mail.

3. CONDITIONS OF WORK.

Each bidder must inform himself fully of the conditions relating to the construction and labor under which the work is now being or will be performed. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated work for the consideration set forth in his bid. Insofar as possible, the Contractor, in the carrying out of his work, must employ such methods or means as will not cause any interruption of, or interference with, the work of any other Contractor, or with the Owner's operations.

Each bidder is encouraged to attend the pre-bid conference at the site. See Section 00020 Invitation to Bid.

4. ADDENDA AND INTERPRETATIONS.

No interpretation of the meaning of the Plans, Specifications or other Contract Documents will be made to any bidder orally. Every request for such interpretation should be in writing, addressed to Harriman Associates, at One Auburn Business Park, Auburn, Maine, fax number (207)782-3017, and to be given consideration, must be received at least 3 days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the Specifications which, if issued, will be mailed to all prospective bidders (at the respective addresses furnished for such purposes) not later than 2 days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addenda or interpretation shall not relieve any bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

5. CONSTRUCTION TERMS AND CONDITIONS.

The bidder is warned that the Construction Terms and conditions hereinafter fully set forth in the AGREEMENT will be rigidly enforced.

6. AWARD OR REJECTION OF BIDS.

The Owner reserves the right to reject any and all bids, and to waive any informality in bids received, whenever such rejection or waiver is in the interest of the Owner. Owner reserves the right to select any of the submitted bids. Owner will have no restrictions on selection.

7. SECURITY FOR FAITHFUL PERFORMANCE.

Simultaneously with his delivery of the executed Contract, the Contractor shall furnish a Surety Bond in the amount at least equal to 100% of the Contract price as security for faithful performance of this Contract and for payment to all persons performing labor for furnishing materials in connection with this Contract, prepared in the form of "Performance-Payment Bond" AIA Form A-311. The surety on such bond shall be a Surety Company acceptable and approved by the Owner, and authorized to transact business in this State.

8. BID SECURITY.

Each bid must be accompanied by a bid bond in the amount of five percent (5%) of the bid. Such securities will be returned to all except the three lowest formal bidders within three days after the formal opening of bids, and the remaining securities will be returned to three lowest bidders within 48 hours after the Owner and the accepted bidder have executed the Contract, or if no Contract has been so executed within 30 days after the date of the opening of bids, upon demand of the bidder at any time thereafter so long as he has not been notified of the acceptance of his bid.

9. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT.

The successful bidder upon his failure or refusal to execute and deliver the Contract and Bond required within ten days after he has received notice of the acceptance of his bid, shall forfeit to the Owner liquidated damages for such failure or refusal, the security deposited with his bid.

10. OBLIGATION OF BIDDERS.

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Contract Documents (including all addenda). The failure or omission of any bidder to receive or examine any form, instrument or document, shall in no way relieve any bidder from any obligation in respect to his bid.

11. SUBSTITUTIONS.

(a) The bid shall be based on the materials or products as specified. Whenever in the Specifications a particular article is specified by proprietary name, the bidder shall base his bid on same.

(b) For an item to be considered as an approved equal where allowed, the request shall be made in writing, received at least 7 days prior to the bid date, with a complete submittal for the proposed item, and the identification of the item and specification section. All approvals will be issued as addenda. See Section 01630 for additional requirements.

SECTION 00200

INFORMATION AVAILABLE TO BIDDERS

PART 1 - GENERAL

1.01 ARSENIC SOIL TESTING REPORT

- A. The arsenic survey report identifying the location of arsenic containing soil and the documents for abatement being done for this project are available for viewing at the office of Michael Komich, Business Manager, located in the Residence Building at the Ocean Avenue campus.

END OF SECTION

SECTION 00300

SEE ADDENDUM # 1

GENERAL CONTRACTOR BID FORM

CHEVERUS HIGH SCHOOL
WASHINGTON AVENUE ATHLETIC FACILITY
PORTLAND, MAINE

To: _____

From: _____

1. The undersigned BIDDER agrees, if this Bid is accepted, to enter into an agreement with the Cheverus High School, in the form included in the Bidding Documents, to perform and furnish the Work as specified or indicated in the Bidding Documents for the Bid Price and within the Bid Times indicated in the Bid and in accordance with the other terms and conditions of the Contract Documents.

- 2. In submitting the Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - . This Bid will remain subject to acceptance for 30 days after the Bid opening:
 - . The Owner has the right to reject this Bid:
 - . BIDDER will sign and submit the Agreement with other documents required by the Bidding Requirements within 15 days after the date of Notice of Award:
 - . BIDDER has examined copies of all the Bidding Documents:
 - . BIDDER has visited the site and become familiar with the general, local and site conditions:
 - . BIDDER is familiar with federal, state and local laws and regulations:
 - . BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, report and drawings identified in the Bidding Documents and additional examination, investigations, explorations, tests, studies and data with the Bidding Documents:
 - . BIDDER has received the following Addenda receipt of which is hereby acknowledged:

Date	Number
_____	_____
_____	_____
_____	_____

3. BIDDER will complete the Work in accordance with the Contract Documents for the following Lump Sum price:

_____ (\$ _____)

4. Unit Prices: The undersigned agrees to perform additional work as ordered or to allow for work ordered omitted in accordance with the following Unit Prices. Unit Prices will be applied to the net change in final quantities of work involved. The deduct price will be the same as the add.

- | | | |
|----|----------------------------------------------------------------------------------------|----------|
| 1. | Excavation and backfill with excavated material -
per cubic yard (in place) - open. | \$ _____ |
| 2. | Excavation of material and removal from site -
per cubic yard - open | \$ _____ |
| 3. | Excavation and backfill with excavated material -
per cubic yard (in place) trench | \$ _____ |
| 4. | Excavation of material and removal from site -
per cubic yard - trench | \$ _____ |
| 5. | Rock excavation, including removal from site -
per cubic yard - open | \$ _____ |
| 6. | Rock excavation, including removal from site -
trench | \$ _____ |
| 7. | Granular borrow fill and backfill -
in place per cubic yard | \$ _____ |
| 8. | Gravel base, in place - per cubic yard | \$ _____ |
| 9. | Gravel sub base, in place - per cubic yard | \$ _____ |

4. The undersigned agrees to complete the project on or before September 14, 2001, or within the equivalent number of calendar days if the start of the project work is delayed by the Owner beyond the start date.

This Bid may be withdrawn at any time prior to the scheduled time for the opening of Bids or any authorized postponement thereof.

The Owner reserves the right to reject this bid in the event that any items of the Bid Form are not complete.

Date _____ By _____

AIA DOCUMENT A101-1997

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a STIPULATED SUM

AGREEMENT made as of the _____ day of _____
in the year _____
(In words, indicate day, month and year)

BETWEEN the Owner:
(Name, address and other information)

and the Contractor:
(Name, address and other information)

The Project is:
(Name and location)

The Architect is:
(Name, address and other information)

The Owner and Contractor agree as follows.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201-1997, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

This document has been approved and endorsed by The Associated General Contractors of America.



© 1997 AIA®
AIA DOCUMENT A101-1997
OWNER-CONTRACTOR
AGREEMENT

The American Institute
of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

SAMPLE: This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet information on licensed reproduction.

SAMPLE : This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 8.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

If, prior to the commencement of the Work, the Owner requires time to file mortgages, mechanic's liens and other security interests, the Owner's time requirement shall be as follows:

3.2 The Contract Time shall be measured from the date of commencement.

3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than _____ days from the date of commencement, or as follows:

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. Unless stated elsewhere in the Contract Documents, insert any requirements for earlier Substantial Completion of certain portions of the Work.)

, subject to adjustments of this Contract Time as provided in the Contract Documents.

(Insert provisions, if any, for liquidated damages relating to failure to complete on time or for bonus payments for early completion of the Work.)



© 1997 AIA®
AIA DOCUMENT A101-1997
OWNER-CONTRACTOR
AGREEMENT

The American Institute
of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

ARTICLE 4 CONTRACT SUM

4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be _____ Dollars (\$ _____), subject to additions and deductions as provided in the Contract Documents.

4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If decisions on other alternates are to be made by the Owner subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

4.3 Unit prices, if any, are as follows:

ARTICLE 5 PAYMENTS

5.1 PROGRESS PAYMENTS

5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month; or as follows:

5.1.3 Provided that an Application for Payment is received by the Architect not later than the _____ day of a month, the Owner shall make payment to the Contractor not later than the _____ day of the _____ month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than _____ days after the Architect receives the Application for Payment.

5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.



© 1997 AIA®
AIA DOCUMENT A101-1997
OWNER-CONTRACTOR
AGREEMENT

The American Institute
of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

SAMPLE: This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet information on licensed reproduction.

SAMPLE: This standard document is NOT a model form, its inclusion in the Architect's Handbook of Professional Practice does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet information on licensed reproduction.

5.1.5 Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

1. Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of _____ percent (_____ %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Subparagraph 7.3.8 of AIA Document A201-1997;
2. Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of _____ percent (_____ %);
3. Subtract the aggregate of previous payments made by the Owner; and
4. Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Paragraph 9.5 of AIA Document A201-1997.

5.1.7 The progress payment amount determined in accordance with Subparagraph 5.1.6 shall be further modified under the following circumstances:

1. Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and (*Subparagraph 9.8.5 of AIA Document A201-1997 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.*)
2. Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Subparagraph 9.10.3 of AIA Document A201-1997.

5.1.8 Reduction or limitation of retainage, if any, shall be as follows:
(*If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Clauses 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.*)

5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

5.2 FINAL PAYMENT

5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when:

1. the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Subparagraph 12.2.2 of AIA Document A201-1997, and to satisfy other requirements, if any, which extend beyond final payment; and
2. a final Certificate for Payment has been issued by the Architect.



© 1997 AIA®
AIA DOCUMENT A101-1997
OWNER-CONTRACTOR
AGREEMENT

The American Institute
of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

ARTICLE 6 TERMINATION OR SUSPENSION

6.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201-1997.

6.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-1997.

ARTICLE 7 MISCELLANEOUS PROVISIONS

7.1 Where reference is made in this Agreement to a provision of AIA Document A201-1997 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

7.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

(Usury laws and requirements under the Federal Truth in Lending Act, similar state and local consumer credit laws and other regulations at the Owner's and Contractor's principal places of business, the location of the Project and elsewhere may affect the validity of this provision. Legal advice should be obtained with respect to deletions or modifications, and also regarding requirements such as written disclosures or waivers.)

7.3 The Owner's representative is:
(Name, address and other information)

7.4 The Contractor's representative is:
(Name, address and other information)

7.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days' written notice to the other party.

7.6 Other provisions:



© 1997 AIA®
AIA DOCUMENT A101-1997
OWNER-CONTRACTOR
AGREEMENT

The American Institute
of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

SAMPLE: This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for information on licensed reproduction.

ARTICLE 8 ENUMERATION OF CONTRACT DOCUMENTS

8.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:

8.1.1 The Agreement is this executed 1997 edition of the Standard Form of Agreement Between Owner and Contractor, AIA Document A101-1997.

8.1.2 The General Conditions are the 1997 edition of the General Conditions of the Contract for Construction, AIA Document A201-1997.

8.1.3 The Supplementary and other Conditions of the Contract are those contained in the Project Manual dated _____, and are as follows:

Document	Title	Pages
----------	-------	-------

8.1.4 The Specifications are those contained in the Project Manual dated as in Subparagraph 8.1.3, and are as follows:

(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

Section	Title	Pages
---------	-------	-------

8.1.5 The Drawings are as follows, and are dated _____ unless a different date is shown below:

(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Number	Title	Date
--------	-------	------



© 1997 AIA®
AIA DOCUMENT A101-1997
OWNER-CONTRACTOR
AGREEMENT

The American Institute
of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

SAMPLE: This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet information on licensed reproduction.

8.1.6 The Addenda, if any, are as follows:

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 8.

8.1.7 Other documents, if any, forming part of the Contract Documents are as follows:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201-1997 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

This Agreement is entered into as of the day and year first written above and is executed in at least three original copies, of which one is to be delivered to the Contractor, one to the Architect for use in the administration of the Contract, and the remainder to the Owner.

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

CAUTION: You should sign an original AIA document or a licensed reproduction. Originals contain the AIA logo printed in red; licensed reproductions are those produced in accordance with the Instructions to this document.



© 1997 AIA®
AIA DOCUMENT A101-1997
OWNER-CONTRACTOR
AGREEMENT

The American Institute
of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

SAMPLE: This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the instruction sheet information on licensed reproduction.

THE AMERICAN INSTITUTE OF ARCHITECTS



AIA Document A312

Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond:

None

See Page 3

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and Title:

Signature: _____

Name and Title:

(Any additional signatures appear on page 3)

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

SAMPLE
This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice, 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for information on licensed reproduction.

- 1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
- 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
- 3 If there is no Owner Default, the Surety's obligation under this Bond shall arise after:
- 3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and
- 3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and
- 3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
- 4 When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
- 4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or
- 4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or
- 4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or
- 4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner citing reasons therefor.
- 5 If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
- 6 After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:
- 6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- 6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and
- 6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- 7 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators or successors.
- 8 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- 9 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation avail-

SAMPLE

This standard document is NOT a contract. Its inclusion in the Architect's Handbook of Professional Practice, 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for Information on licensed reproduction.

able to sureties as a defense in the jurisdiction of the suit shall be applicable.

10 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12 DEFINITIONS

12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Con-

tractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL
Company:

(Corporate Seal)

SURETY
Company:

(Corporate Seal)

Signature: _____
Name and Title:
Address:

Signature: _____
Name and Title:
Address:

SAMPLE
This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for information on licensed reproduction.

THE AMERICAN INSTITUTE OF ARCHITECTS



AIA Document A312

Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond:

None

See Page 6

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and Title:

Signature: _____

Name and Title:

(Any additional signatures appear on page 6)

(FOR INFORMATION ONLY--Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

SAMPLE

This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice, 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for information on licensed reproduction.

SAMPLE

This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice, 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for information on licensed reproduction.

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2 With respect to the Owner, this obligation shall be null and void if the Contractor:

2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for the payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

3 With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4 The Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with the Contractor:

1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
3. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5 If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6 When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7 The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

11 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this

Bond shall be construed as a statutory bond and not as a common law bond.

14 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15 DEFINITIONS

15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the

Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

SAMPLE
This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice, 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for information on licensed reproduction.

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL
Company:

(Corporate Seal)

SURETY
Company:

(Corporate Seal)

Signature: _____
Name and Title:
Address:

Signature: _____
Name and Title:
Address:

APPLICATION AND CERTIFICATE FOR PAYMENT

AIA DOCUMENT G702 (Instructions on reverse side) PAGE ONE OF _____ PAGES

TO OWNER: PROJECT: _____

FROM CONTRACTOR: VIA ARCHITECT: _____

CONTRACT FOR: _____

APPLICATION NO.: _____

PERIOD TO: _____

PROJECT NOS.: _____

CONTRACT DATE: _____

Distribution to:
 OWNER
 ARCHITECT
 CONTRACTOR

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM \$ _____
2. Net change by Change Orders \$ _____
3. CONTRACT SUM TO DATE (Line 1 + 2) \$ _____
4. TOTAL COMPLETED & STORED TO DATE \$ _____
 (Column G on G703)
5. RETAINAGE:
 - a. _____% of Completed Work \$ _____
 (Columns D + E on G703)
 - b. _____% of Stored Material \$ _____
 (Column F on G703)
 Total Retainage (Line 5a + 5b or Total in Column I of G703) \$ _____
6. TOTAL EARNED LESS RETAINAGE \$ _____
 (Line 4 less Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT \$ _____
 (Line 6 from prior Certificate)
8. CURRENT PAYMENT DUE \$ _____
9. BALANCE TO FINISH, INCLUDING RETAINAGE \$ _____
 (Line 3 less Line 6)

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of: _____

County of: _____

Subscribed and sworn to before me this _____ day of _____

Notary Public: _____

My Commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ _____

(Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that are changed to conform to the amount certified.)

ARCHITECT: _____

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

AIA DOCUMENT G702 • APPLICATION AND CERTIFICATE FOR PAYMENT • 1992 EDITION • AIA® • ©1992 • THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, D.C. 20006-5292 • WARNING: Unlicensed photocopying violates U.S. copyright laws and will subject the violator to legal prosecution.



G702-1992

CAUTION: You should use an original AIA document which has this caution printed in red. An original assures that changes will not be obscured as may occur when documents are reproduced.

This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice, 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for Information on licensed reproduction.

CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO.:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D+E+F)	H BALANCE TO FINISH (C-G)	I RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)						

AIA DOCUMENT G703 • CONTINUATION SHEET FOR G702 • 1992 EDITION • AIA® • ©1992 • THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, DC 20006-5292 • WARNING: Unlicensed photocopying violates U.S. copyright laws and will subject the violator to legal prosecution.



G703-1992

CAUTION: You should use an original AIA document which has this caution printed in red. An original assures that changes will not be obscured as may occur when documents are reproduced.

SAMPLE

This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice, 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for information on licensed reproduction.

CERTIFICATE OF SUBSTANTIAL COMPLETION

AIA DOCUMENT C704

Distribution to:
 OWNER
 ARCHITECT
 CONTRACTOR
 FIELD
 OTHER

PROJECT:
 (name, address)

ARCHITECT:

ARCHITECT'S PROJECT NUMBER:

TO (Owner):

CONTRACTOR:

CONTRACT FOR:

DATE OF ISSUANCE:

CONTRACT DATE:

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The Work performed under this Contract has been reviewed and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby established as

which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

DEFINITION OF DATE OF SUBSTANTIAL COMPLETION

The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Architect when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the Contractor and verified and amended by the Architect, is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. The date of commencement of warranties for items on the attached list will be the date of final payment unless otherwise agreed to in writing.

 ARCHITECT BY _____ DATE _____

The Contractor will complete or correct the Work on the list of items attached hereto within _____ days from the above Date of Substantial Completion.

 CONTRACTOR BY _____ DATE _____

The Owner accepts the Work or designated portion thereof as substantially complete and will assume full possession thereof at _____ (time) on _____ (date).

 OWNER BY _____ DATE _____

The responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance shall be as follows:

(Note—Owner's and Contractor's legal and insurance counsel should determine and review insurance requirements and coverage; Contractor shall secure consent of surety company, if any.)

CONTRACTOR'S
AFFIDAVIT OF
PAYMENT OF
DEBTS AND CLAIMS

OWNER
ARCHITECT
CONTRACTOR
SURETY
OTHER

AIA Document G706

TO (Owner)

ARCHITECT'S PROJECT NO:

CONTRACT FOR:

PROJECT:
(name, address)

CONTRACT DATE:

State of:

County of:

The undersigned, pursuant to Article 9 of the General Conditions of the Contract for Construction, AIA Document A201, hereby certifies that, except as listed below, he has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his property might in any way be held responsible.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA DOCUMENT G707, CONSENT OF SURETY, may be used for this purpose. Indicate attachment: (yes) (no).

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Sub-contractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens (AIA DOCUMENT G706A).

CONTRACTOR:

Address:

BY:

Subscribed and sworn to before me this
day of 19

Notary Public:

My Commission Expires:

**CONTRACTOR'S
AFFIDAVIT OF
RELEASE OF LIENS**

AIA DOCUMENT G706A

OWNER
ARCHITECT
CONTRACTOR
SURETY
OTHER

TO (Owner)

ARCHITECT'S PROJECT NO:
CONTRACT FOR:

PROJECT:
(name, address)

CONTRACT DATE:

State of:
County of:

The undersigned, pursuant to Article 9 of the General Conditions of the Contract for Construction, AIA Document A201, hereby certifies that to the best of his knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR:

Address:

BY:

Subscribed and sworn to before me this
day of

19

Notary Public:

My Commission Expires:

**CONSENT OF SURETY
TO FINAL PAYMENT**

AIA Document G707

(Instructions on reverse side)

- OWNER
- ARCHITECT
- CONTRACTOR
- SURETY
- OTHER

TO OWNER:
(Name and address)

ARCHITECT'S PROJECT NO.:

CONTRACT FOR:

PROJECT:
(Name and address)

CONTRACT DATED:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

, SURETY,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of
any of its obligations to
(Insert name and address of Owner)

, CONTRACTOR,

as set forth in said Surety's bond.

, OWNER,

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

(Printed name and title)

Attest:
(Seal):



CAUTION: You should sign an original AIA document that has this caution printed in red. An original assures that changes will not be obscured as may occur when documents are reproduced. See Instruction Sheet for Limited License for Reproduction of this document.



AIA DOCUMENT G707 • CONSENT OF SURETY TO FINAL PAYMENT • 1994 EDITION • AIA
©1994 • THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, NW, WASH-
INGTON, D.C. 20006-5292 • WARNING: Unlicensed photocopying violates U.S. copy-
right laws and will subject the violator to legal prosecution.

G707—1994

SAMPLE

This standard document is NOT a model form. Its inclusion in the Architect's Handbook of Professional Practice, 12th Edition, does not constitute a grant of any implied or explicit license to copy it in whole or in part. See the Instruction Sheet for information on licensed reproduction.



General Conditions of the Contract for Construction

AIA Document A201 - 1997
1997 Edition - Electronic Format

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification. AUTHENTICATION OF THIS ELECTRONICALLY DRAFTED AIA DOCUMENT MAY BE MADE BY USING AIA DOCUMENT D401.

This document has been approved and endorsed by The Associated General Contractors of America.

Copyright 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1967, 1970, 1976, 1987, ©1997 by The American Institute of Architects. Fifteenth Edition. Reproduction of the material herein or substantial quotation of its provisions without written permission of the AIA violates the copyright laws of the United States and will subject the violator to legal prosecution.

TABLE OF ARTICLES

1. GENERAL PROVISIONS
2. OWNER
3. CONTRACTOR
4. ADMINISTRATION OF THE CONTRACT
5. SUBCONTRACTORS
6. CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7. CHANGES IN THE WORK
8. TIME
9. PAYMENTS AND COMPLETION
10. PROTECTION OF PERSONS AND PROPERTY
11. INSURANCE AND BONDS
12. UNCOVERING AND CORRECTION OF WORK
13. MISCELLANEOUS PROVISIONS
14. TERMINATION OR SUSPENSION OF THE CONTRACT

AIA DOCUMENT A201-GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION - 1997 EDITION - AIA - COPYRIGHT 1997 - THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE N.W., WASHINGTON, D.C. 20006-5292. WARNING: Unlicensed photocopying violates U.S. copyright laws and will subject the violator to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced without violation until the date of expiration as noted below.

Electronic Format A201-1997

User Document: 97A201.CON -- 1/4/1999. AIA License Number 107490, which expires on 1/31/2000 -- Page #1

INDEX

- Acceptance of Nonconforming Work
 - 9.6.6, 9.9.3, 12.3
- Acceptance of Work
 - 9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3
- Access to Work
 - 3.16, 6.2.1, 12.1
- Accident Prevention
 - 4.2.3, 10
- Acts and Omissions
 - 3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 4.3.8, 4.4.1, 8.3.1, 9.5.1, 10.2.5, 13.4.2, 13.7, 14.1
- Addenda
 - 1.1.1, 3.11
- Additional Costs, Claims for
 - 4.3.4, 4.3.5, 4.3.6, 6.1.1, 10.3
- Additional Inspections and Testing
 - 9.8.3, 12.2.1, 13.5
- Additional Time, Claims for
 - 4.3.4, 4.3.7, 8.3.2
- ADMINISTRATION OF THE CONTRACT
 - 3.1.3, 4, 9.4, 9.5
- Advertisement or Invitation to Bid
 - 1.1.1
- Aesthetic Effect
 - 4.2.13, 4.5.1
- Allowances
 - 3.8
- Anti-risk Insurance
 - 11.4.1.1
- Applications for Payment
 - 4.2.5, 7.3.8, 9.2, 9.3, 9.4, 9.5.1, 9.6.3, 9.7.1, 9.8.5, 9.10, 11.1.3, 14.2.4, 14.4.3
- Approvals
 - 2.4, 3.1.3, 3.5, 3.10.2, 3.12, 4.2.7, 9.3.2, 13.4.2, 13.5
- Arbitration
 - 4.3.3, 4.4, 4.5.1, 4.5.2, 4.6, 8.3.1, 9.7.1, 11.4.9, 11.4.10
- Architect
 - 4.1
- Architect, Definition of
 - 4.1.1
- Architect, Extent of Authority
 - 2.4, 3.12.7, 4.2, 4.3.6, 4.4, 5.2, 6.3, 7.1.2, 7.3.6, 7.4, 9.2, 9.3.1, 9.4, 9.5, 9.8.3, 9.10.1, 9.10.3, 12.1, 12.2.1, 13.5.1, 13.5.2, 14.2.2, 14.2.4
- Architect, Limitations of Authority and Responsibility
 - 2.1.1, 3.3.3, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 4.4, 5.2.1, 7.4, 9.4.2, 9.6.4, 9.6.6
- Architect's Additional Services and Expenses
 - 2.4, 11.4.1.1, 12.2.1, 13.5.2, 13.5.3, 14.2.4
- Architect's Administration of the Contract
 - 3.1.3, 4.2, 4.3.4, 4.4, 9.4, 9.5
- Architect's Approvals
 - 2.4, 3.1.3, 3.5.1, 3.10.2, 4.2.7
- Architect's Authority to Reject Work
 - 3.5.1, 4.2.6, 12.1.2, 12.2.1
- Architect's Copyright
 - 1.6
- Architect's Decisions
 - 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.3.4, 4.4.1, 4.4.5, 4.4.6, 4.5, 6.3, 7.3.6, 7.3.8, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.5.2, 14.2.2, 14.2.4
- Architect's Inspections
 - 4.2.2, 4.2.9, 4.3.4, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.5
- Architect's Instructions
 - 3.2.3, 3.3.1, 4.2.6, 4.2.7, 4.2.8, 7.4.1, 12.1, 13.5.2
- Architect's Interpretations
 - 4.2.11, 4.2.12, 4.3.6
- Architect's Project Representative
 - 4.2.10
- Architect's Relationship with Contractor
 - 1.1.2, 1.6, 3.1.3, 3.2.1, 3.2.2, 3.2.3, 3.3.1, 3.4.2, 3.5.1, 3.7.3, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.2, 4.1.3, 4.2, 4.3.4, 4.4.1, 4.4.7, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 11.4.7, 12, 13.4.2, 13.5
- Architect's Relationship with Subcontractors
 - 1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.4.7
- Architect's Representations
 - 9.4.2, 9.5.1, 9.10.1
- Architect's Site Visits
 - 4.2.2, 4.2.5, 4.2.9, 4.3.4, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5
- Asbestos
 - 10.3.1
- Attorneys' Fees
 - 3.18.1, 9.10.2, 10.3.3
- Award of Separate Contracts
 - 6.1.1, 6.1.2
- Award of Subcontracts and Other Contracts for Portions of the Work
 - 5.2
- Basic Definitions
 - 1.1
- Bidding Requirements
 - 1.1.1, 1.1.7, 5.2.1, 11.5.1
- Boiler and Machinery Insurance
 - 11.4.2
- Bonds, Lien
 - 9.10.2
- Bonds, Performance, and Payment
 - 7.3.6.4, 9.6.7, 9.10.3, 11.4.9, 11.5
- Building Permit
 - 3.7.1
- Capitalization

1.3
Certificate of Substantial Completion
9.8.3, 9.8.4, 9.8.5
Certificates for Payment
4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7.1, 9.10.1,
9.10.3, 13.7, 14.1.1.3, 14.2.4
Certificates of Inspection, Testing or Approval
13.5.4
Certificates of Insurance
9.10.2, 11.1.3
Change Orders
1.1.1, 2.4.1, 3.4.2, 3.8.2.3, 3.11.1, 3.12.8, 4.2.8, 4.3.4, 4.3.9,
5.2.3, 7.1, 7.2, 7.3, 8.3.1, 9.3.1.1, 9.10.3, 11.4.1.2, 11.4.4,
11.4.9, 12.1.2
Change Orders, Definition of
7.2.1
CHANGES IN THE WORK
3.11, 4.2.8, 7, 8.3.1, 9.3.1.1, 11.4.9
Claim, Definition of
4.3.1
Claims and Disputes
3.2.3, 4.3, 4.4, 4.5, 4.6, 6.1.1, 6.3, 7.3.8, 9.3.3, 9.10.4,
10.3.3
Claims and Timely Assertion of Claims
4.6.5
Claims for Additional Cost
3.2.3, 4.3.4, 4.3.5, 4.3.6, 6.1.1, 7.3.8, 10.3.2
Claims for Additional Time
3.2.3, 4.3.4, 4.3.7, 6.1.1, 8.3.2, 10.3.2
Claims for Concealed or Unknown Conditions
4.3.4
Claims for Damages
3.2.3, 3.18, 4.3.10, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1,
11.4.5, 11.4.7, 14.1.3, 14.2.4
Claims Subject to Arbitration
4.4.1, 4.5.1, 4.6.1
Cleaning Up
3.15, 6.3
Commencement of Statutory Limitation Period
13.7
Commencement of the Work, Conditions Relating to
2.2.1, 3.2.1, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 4.3.5, 5.2.1, 5.2.3,
6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.4.1, 11.4.6, 11.5.1
Commencement of the Work, Definition of
8.1.2
Communications Facilitating Contract Administration
3.9.1, 4.2.4
Completion, Conditions Relating to
1.6.1, 3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1,
9.10, 12.2, 13.7, 14.1.2
COMPLETION, PAYMENTS AND
9
Completion, Substantial
4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 9.10.4.2,
12.2, 13.7
Compliance with Laws
1.6.1, 3.2.2, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 4.4.8, 4.6.4, 4.6.6,
9.6.4, 10.2.2, 11.1, 11.4, 13.1, 13.4, 13.5.1, 13.5.2, 13.6,
14.1.1, 14.2.1.3
Concealed or Unknown Conditions
4.3.4, 8.3.1, 10.3
Conditions of the Contract
1.1.1, 1.1.7, 6.1.1, 6.1.4
Consent, Written
1.6, 3.4.2, 3.12.8, 3.14.2, 4.1.2, 4.3.4, 4.6.4, 9.3.2, 9.8.5,
9.9.1, 9.10.2, 9.10.3, 11.4.1, 13.2, 13.4.2
CONSTRUCTION BY OWNER OR BY SEPARATE
CONTRACTORS
1.1.4, 6
Construction Change Directive, Definition of
7.3.1
Construction Change Directives
1.1.1, 3.12.8, 4.2.8, 4.3.9, 7.1, 7.3, 9.3.1.1
Construction Schedules, Contractor's
1.4.1.2, 3.10, 3.12.1, 3.12.2, 4.3.7.2, 6.1.3
Contingent Assignment of Subcontracts
5.4, 14.2.2.2
Continuing Contract Performance
4.3.3
Contract, Definition of
1.1.2
CONTRACT, TERMINATION OR SUSPENSION OF THE
5.4.1.1, 11.4.9, 14
Contract Administration
3.1.3, 4, 9.4, 9.5
Contract Award and Execution, Conditions Relating to
3.7.1, 3.10, 5.2, 6.1, 11.1.3, 11.4.6, 11.5.1
Contract Documents, The
1.1, 1.2
Contract Documents, Copies Furnished and Use of
1.6, 2.2.5, 5.3
Contract Documents, Definition of
1.1.1
Contract Sum
3.8, 4.3.4, 4.3.5, 4.4.5, 5.2.3, 7.2, 7.3, 7.4, 9.1, 9.4.2,
9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.4.1, 14.2.4, 14.3.2
Contract Sum, Definition of
9.1
Contract Time
4.3.4, 4.3.7, 4.4.5, 5.2.3, 7.2.1.3, 7.3, 7.4, 8.1.1, 8.2, 8.3.1,
9.5.1, 9.7, 10.3.2, 12.1.1, 14.3.2
Contract Time, Definition of
8.1.1
CONTRACTOR
3
Contractor, Definition of

A DOCUMENT A201-GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION - 1997 EDITION - AIA - COPYRIGHT 1997 - THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE N.W., WASHINGTON, D.C. 20006-5292. WARNING: Unlicensed photocopying violates U.S. copyright laws and will subject the violator to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced without violation until the date of expiration as noted, below.

3.1, 6.1.2	2.4, 3.2.3, 3.7.4, 3.8.2, 3.13.2, 4.3, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.6, 7.3.7, 7.3.8, 9.10.2, 10.3.2, 10.5, 11.3, 11.4, 12.1, 12.2.1, 12.2.4, 13.5, 14
Contractor's Construction Schedules	Cutting and Patching
1.4.1.2, 3.10, 3.12.1, 3.12.2, 4.3.7.2, 6.1.3	6.2.5, 3.14
Contractor's Employees	Damage to Construction of Owner or Separate Contractors
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.1.1, 11.4.7, 14.1, 14.2.1.1,	3.14.2, 6.2.4, 9.2.1.5, 10.2.1.2, 10.2.5, 10.6, 11.1, 11.4, 12.2.4
Contractor's Liability Insurance	Damage to the Work
11.1	3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.6, 11.4, 12.2.4
Contractor's Relationship with Separate Contractors and Owner's Forces	Damages, Claims for
3.12.5, 3.14.2, 4.2.4, 6, 11.4.7, 12.1.2, 12.2.4	3.2.3, 3.18, 4.3.10, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1, 11.4.5, 11.4.7, 14.1.3, 14.2.4
Contractor's Relationship with Subcontractors	Damages for Delay
1.2.2, 3.3.2, 3.18.1, 3.18.2, 5, 9.6.2, 9.6.7, 9.10.2, 11.4.1.2, 11.4.7, 11.4.8	6.1.1, 8.3.3, 9.5.1.6, 9.7, 10.3.2
Contractor's Relationship with the Architect	Date of Commencement of the Work, Definition of
1.1.2, 1.6, 3.1.3, 3.2.1, 3.2.2, 3.2.3, 3.3.1, 3.4.2, 3.5.1, 3.7.3, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.2, 4.1.3, 4.2, 4.3.4, 4.4.1, 4.4.7, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 11.4.7, 12, 13.4.2, 13.5	8.1.2
Contractor's Representations	Date of Substantial Completion, Definition of
1.5.2, 3.5.1, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2	8.1.3
Contractor's Responsibility for Those Performing the Work	Day, Definition of
3.3.2, 3.18, 4.2.3, 4.3.8, 5.3.1, 6.1.3, 6.2, 6.3, 9.5.1, 10	8.1.4
Contractor's Review of Contract Documents	Decisions of the Architect
1.5.2, 3.2, 3.7.3	4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.3.4, 4.4.1, 4.4.5, 4.4.6, 4.5, 6.3, 7.3.6, 7.3.8, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.5.2, 14.2.2, 14.2.4
Contractor's Right to Stop the Work	Decisions to Withhold Certification
9.7	9.4.1, 9.5, 9.7, 14.1.1.3
Contractor's Right to Terminate the Contract	Defective or Nonconforming Work, Acceptance, Rejection and Correction of
4.3.10, 14.1	2.3, 2.4, 3.5.1, 4.2.6, 6.2.5, 9.5.1, 9.5.2, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1, 13.7.1.3
Contractor's Submittals	Defective Work, Definition of
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.6, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3, 11.1.3, 11.5.2	3.5.1
Contractor's Superintendent	Definitions
3.9, 10.2.6	1.1, 2.1.1, 3.1, 3.5.1, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 4.3.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 7.3.6, 8.1, 9.1, 9.8.1
Contractor's Supervision and Construction Procedures	Delays and Extensions of Time
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 4.3.3, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14	3.2.3, 4.3.1, 4.3.4, 4.3.7, 4.4.5, 5.2.3, 7.2.1, 7.3.1, 7.4.1, 7.5.1, 8.3, 9.5.1, 9.7.1, 10.3.2, 10.6.1, 14.3.2
Contractual Liability Insurance	Disputes
11.1.1.8, 11.2, 11.3	4.1.4, 4.3, 4.4, 4.5, 4.6, 6.3, 7.3.8
Coordination and Correlation	Documents and Samples at the Site
1.2, 1.5.2, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1	3.11
Copies Furnished of Drawings and Specifications	Drawings, Definition of
1.6, 2.2.5, 3.11	1.1.5
Copyrights	Drawings and Specifications, Use and Ownership of
1.6, 3.17	1.1.1, 1.3, 2.2.5, 3.11, 5.3
Correction of Work	Effective Date of Insurance
2.3, 2.4, 3.7.4, 4.2.1, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, 12.2, 13.7.1.3	8.2.2, 11.1.2
Correlation and Intent of the Contract Documents	Emergencies
1.2	4.3.5, 10.6, 14.1.1.2
Cost, Definition of	Employees, Contractor's
7.3.6	3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3,
Costs	

11.1.1, 11.4.7, 14.1, 14.2.1.1	11.4.2
Equipment, Labor, Materials and	Insurance, Contractor's Liability
1.1.3, 1.1.6, 3.4, 3.5.1, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6,	11.1
4.2.7, 5.2.1, 6.2.1, 7.3.6, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1,	Insurance, Effective Date of
10.2.4, 14.2.1.2	8.2.2, 11.1.2
Execution and Progress of the Work	Insurance, Loss of Use
1.1.3, 1.2.1, 1.2.2, 2.2.3, 2.2.5, 3.1, 3.3, 3.4, 3.5, 3.7, 3.10,	11.4.3
3.12, 3.14, 4.2.2, 4.2.3, 4.3.3, 6.2.2, 7.1.3, 7.3.4, 8.2, 9.5,	Insurance, Owner's Liability
9.9.1, 10.2, 10.3, 12.2, 14.2, 14.3	11.2
Extensions of Time	Insurance, Project Management Protective Liability
3.2.3, 4.3.1, 4.3.4, 4.3.7, 4.4.5, 5.2.3, 7.2.1, 7.3, 7.4.1, 9.5.1,	11.3
9.7.1, 10.3.2, 10.6.1, 14.3.2	Insurance, Property
Failure of Payment	10.2.5, 11.4
4.3.6, 9.5.1.3, 9.7, 9.10.2, 14.1.1.3, 14.2.1.2, 13.6	Insurance, Stored Materials
Faulty Work	9.3.2, 11.4.1.4
(See Defective or Nonconforming Work)	INSURANCE AND BONDS
Final Completion and Final Payment	11
4.2.1, 4.2.9, 4.3.2, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.4.1, 11.4.5,	Insurance Companies, Consent to Partial Occupancy
12.3.1, 13.7, 14.2.4, 14.4.3	9.9.1, 11.4.1.5
Financial Arrangements, Owner's	Insurance Companies, Settlement with
2.2.1, 13.2.2, 14.1.1.5	11.4.10
Fire and Extended Coverage Insurance	Intent of the Contract Documents
11.4	1.2.1, 4.2.7, 4.2.12, 4.2.13, 7.4
GENERAL PROVISIONS	Interest
1	13.6
Governing Law	Interpretation
13.1	1.2.3, 1.4, 4.1.1, 4.3.1, 5.1, 6.1.2, 8.1.4
Guarantees (See Warranty)	Interpretations, Written
Hazardous Materials	4.2.11, 4.2.12, 4.3.6
10.2.4, 10.3, 10.5	Joinder and Consolidation of Claims Required
Identification of Contract Documents	4.6.4
1.5.1	Judgment on Final Award
Identification of Subcontractors and Suppliers	4.6.6
5.2.1	Labor and Materials, Equipment
Indemnification	1.1.3, 1.1.6, 3.4, 3.5.1, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6,
3.17, 3.18, 9.10.2, 10.3.3, 10.5, 11.4.1.2, 11.4.7	4.2.7, 5.2.1, 6.2.1, 7.3.6, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1,
Information and Services Required of the Owner	10.2.4, 14.2.1.2
2.1.2, 2.2, 3.2.1, 3.12.4, 3.12.10, 4.2.7, 4.3.3, 6.1.3, 6.1.4,	Labor Disputes
6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.4,	8.3.1
13.5.1, 13.5.2, 14.1.1.4, 14.1.4	Laws and Regulations
Injury or Damage to Person or Property	1.6, 3.2.2, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 4.4.8, 4.6, 9.6.4,
4.3.8, 10.2, 10.6	9.9.1, 10.2.2, 11.1, 11.4, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14
Inspections	Liens
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.2, 9.8.3,	2.1.2, 4.4.8, 8.2.2, 9.3.3, 9.10
9.9.2, 9.10.1, 12.2.1, 13.5	Limitation on Consolidation or Joinder
Instructions to Bidders	4.6.4
1.1.1	Limitations, Statutes of
Instructions to the Contractor	4.6.3, 12.2.6, 13.7
3.2.3, 3.3.1, 3.8.1, 4.2.8, 5.2.1, 7, 12, 8.2.2, 13.5.2	Limitations of Liability
Insurance	2.3, 3.2.1, 3.5.1, 3.7.3, 3.12.8, 3.12.10, 3.17, 3.18, 4.2.6,
3.18.1, 6.1.1, 7.3.6, 8.2.1, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 9.10.5,	4.2.7, 4.2.12, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.10.4, 10.3.3,
11	10.2.5, 11.1.2, 11.2.1, 11.4.7, 12.2.5, 13.4.2
Insurance, Boiler and Machinery	Limitations of Time

2.1.2, 2.2, 2.4, 3.2.1, 3.7.3, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7, 4.3, 4.4, 4.5, 4.6, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 11.4.1.5, 11.4.6, 11.4.10, 12.2, 13.5, 13.7, 14	Occupancy
	2.2.2, 9.6.6, 9.8, 11.4.1.5
As of Use Insurance	Orders, Written
11.4.3	1.1.1, 2.3, 3.9, 4.3.6, 7, 8.2.2, 11.4.9, 12.1, 12.2, 13.5.2, 14.3.1
Material Suppliers	OWNER
1.6, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.6, 9.10.5	2
Materials, Hazardous	Owner, Definition of
10.2.4, 10.3, 10.5	2.1
Materials, Labor, Equipment and	Owner, Information and Services Required of the
1.1.3, 1.1.6, 1.6.1, 3.4, 3.5.1, 3.8.2, 3.8.23, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.6, 9.5.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.2	2.1.2, 2.2, 3.2.1, 3.12.4, 3.12.10, 4.2.7, 4.3.3, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.4, 13.5.1, 13.5.2, 14.1.1.4, 14.1.4
Means, Methods, Techniques, Sequences and Procedures of Construction	Owner's Authority
3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2	1.6, 2.1.1, 2.3, 2.4, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.1.3, 4.2.4, 4.2.9, 4.3.6, 4.4.7, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.1, 9.3.2, 9.5.1, 9.9.1, 9.10.2, 10.3.2, 11.1.3, 11.3.1, 11.4.3, 11.4.10, 12.2.2, 12.3.1, 13.2.2, 14.3, 14.4
Mechanic's Lien	Owner's Financial Capability
4.4.8	2.2.1, 13.2.2, 14.1.1.5
Mediation	Owner's Liability Insurance
4.4.1, 4.4.5, 4.4.6, 4.4.8, 4.5, 4.6.1, 4.6.2, 8.3.1, 10.5	11.2
Minor Changes in the Work	Owner's Loss of Use Insurance
1.1.1, 3.12.8, 4.2.8, 4.3.6, 7.1, 7.4	11.4.3
MISCELLANEOUS PROVISIONS	Owner's Relationship with Subcontractors
13	1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2
Modifications, Definition of	Owner's Right to Carry Out the Work
1.1.1	2.4, 12.2.4, 14.2.2.2
Modifications to the Contract	Owner's Right to Clean Up
1.1.1, 1.1.2, 3.7.3, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2, 11.4.1	6.3
Mutual Responsibility	Owner's Right to Perform Construction and to Award Separate Contracts
6.2	6.1
Nonconforming Work, Acceptance of	Owner's Right to Stop the Work
9.6.6, 9.9.3, 12.3	2.3
Nonconforming Work, Rejection and Correction of	Owner's Right to Suspend the Work
2.3, 2.4, 3.5.1, 4.2.6, 6.2.5, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2.1, 13.7.1.3	14.3
Notice	Owner's Right to Terminate the Contract
2.2.1, 2.3, 2.4, 3.2.3, 3.3.1, 3.7.2, 3.7.4, 3.12.9, 4.3, 4.4.8, 4.6.5, 5.2.1, 8.2.2, 9.7, 9.10, 10.2.2, 11.1.3, 11.4.6, 12.2.2, 12.2.4, 13.3, 13.5.1, 13.5.2, 14.1, 14.2	14.2
Notice, Written	Ownership and Use of Drawings, Specifications and Other Instruments of Service
2.3, 2.4, 3.3.1, 3.9, 3.12.9, 3.12.10, 4.3, 4.4.8, 4.6.5, 5.2.1, 8.2.2, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 11.4.6, 12.2.2, 12.2.4, 13.3, 14	1.1.1, 1.6, 2.2.5, 3.2.1, 3.11.1, 3.17.1, 4.2.12, 5.3
Notice of Testing and Inspections	Partial Occupancy or Use
13.5.1, 13.5.2	9.6.6, 9.9, 11.4.1.5
Notice to Proceed	Patching, Cutting and
8.2.2	3.14, 6.2.5
Notices, Permits, Fees and	Patents
2.2.2, 3.7, 3.13, 7.3.6.4, 10.2.2	3.17
Observations, Contractor's	Payment, Applications for
1.5.2, 3.2, 3.7.3, 4.3.4	4.2.5, 7.3.8, 9.2, 9.3, 9.4, 9.5.1, 9.6.3, 9.7.1, 9.8.5, 9.10.1, 9.10.3, 9.10.5, 11.1.3, 14.2.4, 14.4.3
	Payment, Certificates for

DOCUMENT A201-GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION - 1997 EDITION - AIA - COPYRIGHT 1997 - THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE N.W., WASHINGTON, D.C. 20006-5292. WARNING: Unlicensed photocopying violates U.S. copyright laws and will subject the violator to legal prosecution. This document was electronically produced with permission of the AIA and can be reproduced without violation until the date of expiration as noted below.

4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7.1, 9.10.1,
9.10.3, 13.7, 14.1.1.3, 14.2.4

Payment, Failure of
4.3.6, 9.5.1.3, 9.7, 9.10.2, 14.1.1.3, 14.2.1.2, 13.6

Payment, Final
4.2.1, 4.2.9, 4.3.2, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.4.1, 11.4.5,
12.3.1, 13.7, 14.2.4, 14.4.3

Payment Bond, Performance Bond and
7.3.6.4, 9.6.7, 9.10.3, 11.4.9, 11.5

Payments, Progress
4.3.3, 9.3, 9.6, 9.8.5, 9.10.3, 13.6, 14.2.3

PAYMENTS AND COMPLETION
9

Payments to Subcontractors
5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 11.4.8, 14.2.1.2

PCB
10.3.1

Performance Bond and Payment Bond
7.3.6.4, 9.6.7, 9.10.3, 11.4.9, 11.5

Permits, Fees and Notices
2.2.2, 3.7, 3.13, 7.3.6.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF
10

Polychlorinated Biphenyl
10.3.1

Product Data, Definition of
3.12.2

Product Data and Samples, Shop Drawings
3.11, 3.12, 4.2.7

Progress and Completion
4.2.2, 4.3.3, 8.2, 9.8, 9.9.1, 14.1.4

Progress Payments
4.3.3, 9.3, 9.6, 9.8.5, 9.10.3, 13.6, 14.2.3

Project, Definition of the
1.1.4

Project Management Protective Liability Insurance
11.3

Project Manual, Definition of the
1.1.7

Project Manuals
2.2.5

Project Representatives
4.2.10

Property Insurance
10.2.5, 11.4

PROTECTION OF PERSONS AND PROPERTY
10

Regulations and Laws
1.6, 3.2.2, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 4.4.8, 4.6, 9.6.4,
9.9.1, 10.2.2, 11.1, 11.4, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14

Rejection of Work
3.5.1, 4.2.6, 12.2.1

Releases and Waivers of Liens
9.10.2

Representations
1.5.2, 3.5.1, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.8.2,
9.10.1

Representatives
2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.1, 4.2.10, 5.1.1, 5.1.2, 13.2.1

Resolution of Claims and Disputes
4.4, 4.5, 4.6

Responsibility for Those Performing the Work
3.3.2, 3.18, 4.2.3, 4.3.8, 5.3.1, 6.1.3, 6.2, 6.3, 9.5.1, 10

Retainage
9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3

Review of Contract Documents and Field Conditions by
Contractor
1.5.2, 3.2, 3.7.3, 3.12.7, 6.1.5

Review of Contractor's Submittals by Owner and Architect
3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2

Review of Shop Drawings, Product Data and Samples by
Contractor
3.12

Rights and Remedies
1.1.2, 2.3, 2.4, 3.5.1, 3.15.2, 4.2.6, 4.3.4, 4.5, 4.6, 5.3, 5.4,
6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.2, 12.2.4,
13.4, 14

Royalties, Patents and Copyrights
3.17

Rules and Notices for Arbitration
4.6.2

Safety of Persons and Property
10.2, 10.6

Safety Precautions and Programs
3.3.1, 4.2.2, 4.2.7, 5.3.1, 10.1, 10.2, 10.6

Samples, Definition of
3.12.3

Samples, Shop Drawings, Product Data and
3.11, 3.12, 4.2.7

Samples at the Site, Documents and
3.11

Schedule of Values
9.2, 9.3.1

Schedules, Construction
1.4.1.2, 3.10, 3.12.1, 3.12.2, 4.3.7.2, 6.1.3

Separate Contracts and Contractors
1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 4.6.4, 6, 8.3.1, 11.4.7,
12.1.2, 12.2.5

Shop Drawings, Definition of
3.12.1

Shop Drawings, Product Data and Samples
3.11, 3.12, 4.2.7

Site, Use of
3.13, 6.1.1, 6.2.1

Site Inspections
1.2.2, 3.2.1, 3.3.3, 3.7.1, 4.2, 4.3.4, 9.4.2, 9.10.1, 13.5

Site Visits, Architect's	9.10.2, 9.10.3
4.2.2, 4.2.9, 4.3.4, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5	
Special Inspections and Testing	2.2.3
4.2.6, 12.2.1, 13.5	
Specifications, Definition of the	Suspension by the Owner for Convenience
1.1.6	14.4
Specifications, The	Suspension of the Work
1.1.1, 1.1.6, 1.1.7, 1.2.2, 1.6, 3.11, 3.12.10, 3.17	5.4.2, 14.3
Statute of Limitations	Suspension or Termination of the Contract
4.6.3, 12.2.6, 13.7	4.3.6, 5.4.1.1, 11.4.9, 14
Stopping the Work	Taxes
2.3, 4.3.6, 9.7, 10.3, 14.1	3.6, 3.8.2.1, 7.3.6.4
Stored Materials	Termination by the Contractor
6.2.1, 9.3.2, 10.2.1.2, 10.2.4, 11.4.1.4	4.3.10, 14.1
Subcontractor, Definition of	Termination by the Owner for Cause
5.1.1	4.3.10, 5.4.1.1, 14.2
SUBCONTRACTORS	Termination of the Architect
5	4.1.3
Subcontractors, Work by	Termination of the Contractor
1.2.2, 3.3.2, 3.12.1, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7	14.2.2
Subcontractual Relations	TERMINATION OR SUSPENSION OF THE CONTRACT
5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 11.4.7, 11.4.8, 14.1,	14
14.2.1, 14.3.2	Tests and Inspections
Submittals	3.1.3, 3.3.3, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1,
1.6, 3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.6, 9.2, 9.3, 9.8,	10.3.2, 11.4.1.1, 12.2.1, 13.5
9.9.1, 9.10.2, 9.10.3, 11.1.3	TIME
Subrogation, Waivers of	8
6.1.1, 11.4.5, 11.4.7	Time, Delays and Extensions of
Substantial Completion	3.2.3, 4.3.1, 4.3.4, 4.3.7, 4.4.5, 5.2.3, 7.2.1, 7.3.1, 7.4.1,
4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 9.10.4.2,	7.5.1, 8.3, 9.5.1, 9.7.1, 10.3.2, 10.6.1, 14.3.2
12.2, 13.7	Time Limits
Substantial Completion, Definition of	2.1.2, 2.2, 2.4, 3.2.1, 3.7.3, 3.10, 3.11, 3.12.5, 3.15.1, 4.2,
9.8.1	4.3, 4.4, 4.5, 4.6, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1,
Substitution of Subcontractors	9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 11.4.1.5,
5.2.3, 5.2.4	11.4.6, 11.4.10, 12.2, 13.5, 13.7, 14
Substitution of Architect	Time Limits on Claims
4.1.3	4.3.2, 4.3.4, 4.3.8, 4.4, 4.5, 4.6
Substitutions of Materials	Title to Work
3.4.2, 3.5.1, 7.3.7	9.3.2, 9.3.3
Sub-subcontractor, Definition of	UNCOVERING AND CORRECTION OF WORK
5.1.2	12
Subsurface Conditions	Uncovering of Work
4.3.4	12.1
Successors and Assigns	Unforeseen Conditions
13.2	4.3.4, 8.3.1, 10.3
Superintendent	Unit Prices
3.9, 10.2.6	4.3.9, 7.3.3.2
Supervision and Construction Procedures	Use of Documents
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 4.3.3, 6.1.3, 6.2.4,	1.1.1, 1.6, 2.2.5, 3.12.6, 5.3
7.1.3, 7.3.6, 8.2, 8.3.1, 9.4.2, 10, 12, 14	Use of Site
Surety	3.13, 6.1.1, 6.2.1
4.4.7, 5.4.1.2, 9.8.5, 9.10.2, 9.10.3, 14.2.2	Values, Schedule of
Surety, Consent of	9.2, 9.3.1
	Waiver of Claims by the Architect

13.4.2
Waiver of Claims by the Contractor
4.3.10, 9.10.5, 11.4.7, 13.4.2
Waiver of Claims by the Owner
4.3.10, 9.9.3, 9.10.3, 9.10.4, 11.4.3, 11.4.5, 11.4.7, 12.2.2.1,
13.4.2, 14.2.4
Waiver of Consequential Damages
4.3.10, 14.2.4
Waiver of Liens
9.10.2, 9.10.4
Waivers of Subrogation
6.1.1, 11.4.5, 11.4.7
Warranty
3.5, 4.2.9, 4.3.5.3, 9.3.3, 9.8.4, 9.9.1, 9.10.4, 12.2.2,
13.7.1.3
Weather Delays

4.3.7.2
Work, Definition of
1.1.3
Written Consent
1.6, 3.4.2, 3.12.8, 3.14.2, 4.1.2, 4.3.4, 4.6.4, 9.3.2, 9.8.5,
9.9.1, 9.10.2, 9.10.3, 11.4.1, 13.2, 13.4.2
Written Interpretations
4.2.11, 4.2.12, 4.3.6
Written Notice
2.3, 2.4, 3.3.1, 3.9, 3.12.9, 3.12.10, 4.3, 4.4.8, 4.6.5, 5.2.1,
8.2.2, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 11.4.6, 12.2.2, 12.2.4,
13.3, 14
Written Orders
1.1.1, 2.3, 3.9, 4.3.6, 7, 8.2.2, 11.4.9, 12.1, 12.2, 13.5.2,
14.3.1

ARTICLE 1 GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of Addenda relating to bidding requirements).

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor, (3) between the Owner and Architect or (4) between any persons or entities other than the Owner and Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.2.3 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 CAPITALIZATION

1.3.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents published by the American Institute of Architects.

1.4 INTERPRETATION

1.4.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5 EXECUTION OF CONTRACT DOCUMENTS

1.5.1 The Contract Documents shall be signed by the Owner and Contractor. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

1.5.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.6 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

1.6.1 The Drawings, Specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect or the Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' copyrights or other reserved rights.

ARTICLE 2 OWNER

2.1 GENERAL

2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Subparagraph 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 The Owner shall, at the written request of the Contractor, prior to commencement of the Work and thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Furnishing of such evidence shall be a condition precedent to commencement or continuation of the Work. After such evidence has been furnished, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

2.2.2 Except for permits and fees, including those required under Subparagraph 3.7.1, which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

2.2.4 Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness. Any other information or services relevant to the Contractor's performance of the Work under the Owner's control shall be furnished by the Owner after receipt from the Contractor of a written request for such information or services.

2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a three-day period. If the Contractor within such three-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

3.1 GENERAL

3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents

either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Subparagraph 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, any errors, inconsistencies or omissions discovered by the Contractor shall be reported promptly to the Architect as a request for information in such form as the Architect may require.

3.2.2 Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any nonconformity discovered by or made known to the Contractor shall be reported promptly to the Architect.

3.2.3 If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Architect in response to the Contractor's notices or requests for information pursuant to Subparagraphs 3.2.1 and 3.2.2, the Contractor shall make Claims as provided in Subparagraphs 4.3.6 and 4.3.7. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1 and 3.2.2, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized such error, inconsistency, omission or difference and knowingly failed to report it to the Architect.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any resulting loss or damage.

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4.2 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order.

3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.5 WARRANTY

3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.7 PERMITS, FEES AND NOTICES

3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded.

3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work.

3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

3.8 ALLOWANCES

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances;

- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Clause 3.8.2.1 and (2) changes in Contractor's costs under Clause 3.8.2.2.

3.8.3 Materials and equipment under an allowance shall be selected by the Owner in sufficient time to avoid delay in the Work.

3.9 SUPERINTENDENT

3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

3.10.2 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect without action.

3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in

such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action.

3.12.6 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice the Architect's approval of a resubmission shall not apply to such revisions.

3.12.10 The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Subparagraph 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor

shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP

3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

3.16.1 The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

3.17 ROYALTIES, PATENTS AND COPYRIGHTS

3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law and to the extent claims, damages, losses or expenses are not covered by Project Management Protective Liability insurance purchased by the Contractor in accordance with Paragraph 11.3, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Subparagraph 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

4.1.3 If the employment of the Architect is terminated, the Owner shall employ a new Architect against whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the former Architect.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Paragraph 12.2. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

4.2.2 The Architect, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Subparagraph 3.3.1.

4.2.3 The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

4.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.2.6 The Architect will have authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

4.2.7 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.



4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and initial decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

4.3 CLAIMS AND DISPUTES

4.3.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Time Limits on Claims. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Architect and the other party.

4.3.3 Continuing Contract Performance. Pending final resolution of a Claim except as otherwise agreed in writing or as provided in Subparagraph 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.4 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to

such determination must be made within 21 days after the Architect has given notice of the decision. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.5 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.6.

4.3.6 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Paragraph 4.3.

4.3.7 Claims for Additional Time

4.3.7.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.7.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

4.3.8 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

4.3.9 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

4.3.10 Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Subparagraph 4.3.10 shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 Decision of Architect. Claims, including those alleging an error or omission by the Architect but excluding those arising under Paragraphs 10.3 through 10.5, shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a condition precedent to mediation, arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor

and persons or entities other than the Owner.

4.4.2 The Architect will review Claims and within ten days of the receipt of the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Architect is unable to resolve the Claim if the Architect lacks sufficient information to evaluate the merits of the Claim or if the Architect concludes that, in the Architect's sole discretion, it would be inappropriate for the Architect to resolve the Claim.

4.4.3 In evaluating Claims, the Architect may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Architect in rendering a decision. The Architect may request the Owner to authorize retention of such persons at the Owner's expense.

4.4.4 If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either provide a response on the requested supporting data, advise the Architect when the response or supporting data will be furnished or advise the Architect that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Architect will either reject or approve the Claim in whole or in part.

4.4.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefor and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation and arbitration.

4.4.6 When a written decision of the Architect states that (1) the decision is final but subject to mediation and arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

4.4.7 Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.4.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the Claim by the Architect, by mediation or by arbitration.

4.5 MEDIATION

4.5.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.4 and 9.10.5 shall, after initial decision by the Architect or 30 days after submission of the Claim to the Architect, be subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.

4.5.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

4.5.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as

settlement agreements in any court having jurisdiction thereof.

4.6 ARBITRATION

4.6.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.4 and 9.10.5, shall, after decision by the Architect or 30 days after submission of the Claim to the Architect, be subject to arbitration. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions of Paragraph 4.5.

4.6.2 Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect. The demand for arbitration shall be filed in writing with the other party to the Contract and with the American Arbitration Association, and a copy shall be filed with the Architect.

4.6.3 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.4.6 and 4.6.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.

4.6.4 **Limitation on Consolidation or Joinder.** No arbitration arising out of or relating to the Contract shall include, by consolidation or joinder or in any other manner, the Architect, the Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a Claim not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

4.6.5 **Claims and Timely Assertion of Claims.** The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

4.6.6 **Judgment on Final Award.** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5 SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of

the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitute.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the

Contractor shall make such Claim as provided in Paragraph 4.3.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Other until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work or defective construction of a separate contractor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Subparagraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

7.1 GENERAL

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change

Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect, stating their agreement upon all of the following:

- .1 change in the Work;
- .2 the amount of the adjustment, if any, in the Contract Sum; and
- .3 the extent of the adjustment, if any, in the Contract Time.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, in such form as the

Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.6 shall be limited to the following:

- .1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

7.3.8 Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Architect will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

7.3.9 When the Owner and Contractor agree with the determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK

7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8 TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

8.1.2 The date of commencement of the Work is the date established in the Agreement.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 9.3.

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.2 PROGRESS AND COMPLETION

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the

Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by the Contract Documents or a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.

8.3.3 This Paragraph 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents.

9.3.1.1 As provided in Subparagraph 7.3.8, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment

delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.

9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Subparagraph 3.3.2, because of:

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

- .5 damage to the Owner or another contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 persistent failure to carry out the Work in accordance with the Contract Documents.

9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.6 PROGRESS PAYMENTS

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

9.6.4 Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Clause 11.4.1.5 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 HAZARDOUS MATERIALS

10.3.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

10.3.2 The Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up, which adjustments shall be accomplished as provided in Article 7.

10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Subparagraph 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity.

10.4 The Owner shall not be responsible under Paragraph 10.3 for materials and substances brought to the site by the Contractor unless such materials or substances were required by the Contract Documents.

10.5 If, without negligence on the part of the Contractor, the Contractor is held liable for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

10.6 EMERGENCIES

10.6.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.3 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
- .2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 claims for damages insured by usual personal injury liability coverage;
- .5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 claims for bodily injury or property damage arising out of completed operations; and
- .8 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for

Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

11.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

11.3.1 Optionally, the Owner may require the Contractor to purchase and maintain Project Management Protective Liability insurance from the Contractor's usual sources as primary coverage for the Owner's, Contractor's and Architect's vicarious liability for construction operations under the Contract. Unless otherwise required by the Contract Documents, the Owner shall reimburse the Contractor by increasing the Contract Sum to pay the cost of purchasing and maintaining such optional insurance coverage, and the Contractor shall not be responsible for purchasing any other liability insurance on behalf of the Owner. The minimum limits of liability purchased with such coverage shall be equal to the aggregate of the limits required for Contractor's Liability Insurance under Clauses 11.1.1.2 through 11.1.1.5.

11.3.2 To the extent damages are covered by Project Management Protective Liability insurance, the Owner, Contractor and Architect waive all rights against each other for damages, except such rights as they may have to the proceeds of such insurance. The policy shall provide for such waivers of subrogation by endorsement or otherwise.

11.3.3 The Owner shall not require the Contractor to include the Owner, Architect or other persons or entities as additional insureds on the Contractor's Liability Insurance coverage under Paragraph 11.1.

11.4 PROPERTY INSURANCE

11.4.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.4 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

11.4.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

11.4.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

11.4.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

11.4.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

11.4.1.5 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The



Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.4.2 **Boiler and Machinery Insurance.** The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.4.3 **Loss of Use Insurance.** The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.4.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.4.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.4.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.4.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Paragraph 11.4. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

11.4.7 **Waivers of Subrogation.** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Paragraph 11.4 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.4.8 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph 11.4.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.4.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such

agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.6. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

11.4.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved as provided in Paragraphs 4.5 and 4.6. The Owner as fiduciary shall, in the case of arbitration, make settlement with insurers in accordance with directions of the arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.5 PERFORMANCE BOND AND PAYMENT BOND

11.5.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.5.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

12.2.1.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

12.2.2 AFTER SUBSTANTIAL COMPLETION

12.2.2.1 In addition to the Contractor's obligations under Paragraph 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Paragraph 2.4.

12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Paragraph 12.2.

12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.5 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year period for correction of Work as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Subparagraph 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.2.2 The Owner may, without consent of the Contractor, assign the Contract to an institutional lender providing construction financing for the Project. In such event, the lender shall assume the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Subparagraph 13.5.3, shall be at the Owner's expense.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

- .1 Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;
- .2 Between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and
- .3 After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any Warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other

act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped;
- .2 an act of government, such as a declaration of national emergency which requires all Work to be stopped;
- .3 because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Subparagraph 2.2.1.

14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

14.1.3 If one of the reasons described in Subparagraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.3.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

- .1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior

rights of the surety:

- .1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 accept assignment of subcontracts pursuant to Paragraph 5.4; and
- .3 finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

SUPPLEMENTARY CONDITIONS

The following changes, substitutions and additions are made to the GENERAL CONDITIONS (AIA A201, 1997 Edition), and the articles given refer to the corresponding Articles in the document:

Art 3. Contractor

Par. 3.4 Labor and MaterialsAdd the following subparagraphs:

"Sub Par. 3.4.4. When several materials are specified by name for one use, the Architect shall have the right, before execution of the Contract, to require any or all bidders to state which material they will furnish.

Sub Par. 3.4.5. Wherever the words "approved by," "satisfactory to," "as directed by," "submitted," "inspected by," or similar phrases are used in the Specifications, they shall be understood to mean that the material or item referred to shall be approved by, satisfactory to, as directed by, submitted to, inspected by the Architect.

Sub Par. 3.4.6. The Architect reserves the right to disapprove any material or equipment on the basis of design or color considerations alone, without prejudice to the quality of the material or equipment, if the manufacturer cannot meet the required colors or design."

Para. 3.9 SuperintendentAdd the following subparagraph:

"Sub Par. 3.9.2 After a Superintendent has been assigned to the project, the Superintendent shall remain assigned to the project and be in attendance at the project site during performance of the work through final completion."

Art. 7 Changes in the Work

Sub Par. 7.3.3 In subparagraphs .1 and .3 the allowance for overhead and profit combined, included in the total cost to the Owner shall be based upon the following schedule.

For the Contractor, for any work performed by his own forces 10% of the cost; for each subcontractor involved, work performed by his own forces, 10% of the cost; for the Contractor, for work performed by his subcontractor, 10% of the amount due the subcontractor.

Costs shall be limited to the following:

Costs of materials, including sales tax (if applicable) and cost of delivery, cost of labor, including social security, old age and unemployment insurance (labor cost may include a pro rata share of foremen's time, only in case an extension of Contract Time is granted on account of the change); Workmen's Compensation Insurance; rental value of power tools and equipment.

If the net value of a change results in a credit from the Contractor or subcontractor, the credit given shall be the net cost without overhead or profit. The cost used herein shall include all items of labor, materials and equipment.

Sub Par. 7.3.6 In the first sentence, change the words "... a reasonable allowance for overhead and profit," to read "...an allowance for overhead and profit in accordance with the schedule set forth above in Sub Par. 7.3.3."

Art. 8. TimePar. 8.2 Progress and Completion

Sub Par. 8.2.3 Add the following:

"The Contractor is expected to work overtime, multiple shifts, or other means in order to meet the Owner's schedule. Cost to be carried in the Contractor's base bid."

Par 8.3 Delays and Extensions of Time - Add Subparagraph

"8.3.4 Days and Hours of Work

The Contractor shall make such arrangements with his employees as not to conflict with the wage and hour laws of the State and the United States of America. Be it further understood that if in the opinion of the Owner and the Architect, the work is not progressing fast enough to insure completion by the date set, the Contractor will be required to work such additional shifts and overtime, as in the opinion of the Owner and Architect, is necessary to complete the work on the required date without extra cost to the Owner."

Art. 9. Payments and Completion

Par. 9.3 Applications for Payment - Add subparagraph:

"Sub Par. 9.3.1.3 In making such partial (monthly) payments, there will be retained 10 percent on the estimated amounts until final completion and acceptance of all work."

Par. 9.10 Final Completion and Final Payment

Add to Sub Par. 9.10.2:

"Release of liens will be required from Contractor, all Subcontractors and major material suppliers."

A sample waiver of liens form for subcontractors and materials suppliers and a sample release form for General Contractors are included hereinafter. Other forms may be used provided each form contains the same information.

Par. 9.11 Add new paragraph 9.11

"9.11 Liquidated Damages

9.11.1 The Contractor and the Contractor's surety, if any, shall be liable for and shall pay the Owner the sums hereinafter stipulated as liquidated damages for each calendar day of delay until the Work is substantially complete: \$500.00"

Art. 11. Insurance and Bonds

Par. 11.1 Contractor's Liability Insurance

The Contractor shall not commence work under this Contract until he has obtained all insurance required under this Paragraph, and such insurance has been approved by the Owner through the Architect.

The Contractor shall maintain for this project the following minimum B.I. and P.D. coverages:

Comprehensive General Liability (including Contractual Liability and X, C, U)	\$2,000,000 combined per occurrence single limit per project/location
----------------------------------------------------------------------------------------	--------------------------------------------------------------------------

Vehicle Liability (to include owned, hired or non-owned)	\$1,000,000 combined single limit per occurrence
----------------------------------------------------------------	-----------------------------------------------------

Sub Par. 11.1.1 In the first line following the word "maintain," insert the words "in a company or companies licensed to do business in the State of Maine."

Sub Par. 11.1.3 Add the following:

"The Certificates of Insurance shall evidence and individually identify all required coverages provided."

Add the following Sub Paragraph:

"Sub Par. 11.1.4 In the first sentence, the Certificates of Insurance shall be filed with the "Architect," Notice of cancellation to be given to the Owner and the Architect."

Par. 11.4 Performance Bond and Payment Bond

Sub Par. 11.4.1 Add the following:

"The Contractor shall furnish a Surety Bond in the amount at least equal to 100% of the Contract price as security for faithful performance of this Contract and for payment to all persons performing labor for furnishing materials in connection with this Contract, prepared in the form of "Performance-Payment Bond" AIA Form A-312. The surety on such bond shall be a Surety Company acceptable and approved by the Owner, and authorized to transact business in this State."

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. Drawings, Specifications, general provisions of the Contract, including General and Supplementary Conditions, addenda and modifications.

1.02 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner.
- B. Submit a detailed sequence of work to Owner for review and approval before starting work.
- C. The sports fields inside the chainlink fence limits shall be permanently loamed and seeded by June 15, 2001, to make use of the summer growing season.

1.03 CONTRACTOR USE OF PREMISES

- A. General: The Contractor's use of the premises is limited only by the Owner's right to perform work or to retain other contractors on portions of the site.
- B. Use of the Site: Confine operations to areas within contract limits indicated. Do not disturb the site within the Fall Brook area, beyond the grading limits shown.

1.04 OCCUPANCY REQUIREMENTS

- A. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building and site prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. The Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner occupancy.
 - 2. Obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
 - 3. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving the building.
 - 4. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for the building.

1.05 ASBESTOS REMOVAL AND ARSENIC SOIL REMOVAL AND SITE AVAILABILITY

- A. One of the existing buildings is scheduled to have asbestos removal done by an independent asbestos abatement contractor, hired by the Owner, complete and ready for renovations as follows:
 - 1. Greenhouse Building: Asbestos removal complete April 26, 2001. The building will then be available for demolition.

- B. Some soil inside and surrounding some of the old greenhouses has elevated arsenic contamination levels, and will be removed by an independent abatement contractor, hired by the previous land owner. The abatement is scheduled to be completed by April 18, 2001. The buildings will then be available for demolition, and the site available for construction.
 - C. The site will be available for the contractor by Monday, May 7, 2001.
- 1.06 MISCELLANEOUS PROVISIONS
- A. Material safety data sheets shall be made available in accordance with OSHA requirements.
 - B. No asbestos or arsenic containing materials shall be used in the work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART I - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies administrative and procedural requirements governing the Applications for Payment.
1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.

1.02 RELATED SECTIONS

- A. Section 01300 - Submittals: The Contractor's Construction Schedule.

1.03 SCHEDULE OF VALUES

- A. Coordination: Each subcontractor shall coordinate preparation of its Schedule of Values for its part of the Work with preparation of the Contractors' Construction Schedule.
1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's Construction Schedule.
 - b. Application for Payment forms, including Continuation Sheets.
 - c. List of subcontractors.
 - d. Schedule of submittals.
 2. Submit the Schedule of Values to the Architect at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.
 3. Subschedules: Where Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Architect.
 - c. Project number. **SEE ADDENDUM # 1**
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 - (1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
 4. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.

5. Provide a separate line item for Labor and Materials in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.
 - a. Provide Labor and Materials breakdown for major portions of the work such as sitework, masonry, structural steel, windows, doors and frames, hardware, fire protection, plumbing, HVAC, electrical and other work as requested by the Architect.
6. Cash Allowances: Show the line-item value of cash allowances.
7. Margins of Cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.
8. Schedule Updating: Update and resubmit the Schedule of Values prior to the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.04 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment-Application Times: The date for each progress payment shall be determined at the Preconstruction Conference. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 15 days prior to the date for each progress payment.
- C. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.
- D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Architect will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall be complete, including waivers of lien and similar attachments, when required.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.
- F. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics liens from subcontractors, sub-subcontractors and suppliers for the construction period covered by the previous application.
 1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the application.

- a. Submit final Applications for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.
- G. Record Drawing Updates: With each Application of Payment, record documents shall be maintained and current for all trades, available for viewing at a central location.
- H. Initial Application for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:
 1. List of subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values.
 4. Schedule of Submittals.
 5. Contractor's Construction Schedule (preliminary if not final).
 6. List of Contractor's staff assignments.
 7. Copies of building permits.
 8. Report of preconstruction meeting.
 9. Certificates of insurance and insurance policies.
 10. Performance and payment bonds, if required for the project.
 11. Data needed to acquire the Owner's insurance.
- I. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.
 1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 2. Administrative actions and submittals that shall precede or coincide with this application as specified in Section 01700 - Contract Closeout.
- J. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment are specified in Section 01700 - Contract Closeout.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01030

ALTERNATES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements governing Alternates.

1.02 DEFINITIONS

- A. Definition: An alternate is an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.
 - 2. Hold pricing for 30 days from date of bid to allow Owner time for project accounting. Alternates not accepted before contract signing may be added by Change Order later.

1.03 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.
- B. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate whether alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other Work of this Contract.
- D. Schedule: A "Schedule of Alternates" is included at the end of this Section.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES

- A. Alternate No. 1 - Substitute "Beam Clay Infield Surface" in place of skinned infield mix, and clay pitcher's mound and batter's box. See Section 02200.

END OF SECTION

SECTION 01040

COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General project coordination procedures.
- B. Conservation.
- C. Record Drawings.
- D. Administrative and supervisory personnel.
- E. Cleaning and protection.

1.02 COORDINATION

- A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
 - 3. Make provisions to accommodate items scheduled for later installation.
- B. Coordinate with contractors doing work for the Owner under separate contracts.
- C. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project closeout activities.
- E. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

1.03 SUBMITTALS

- A. Staff Names: Within 15 days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.
 - 1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 GENERAL COORDINATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Record Drawings: Maintain record drawings of all trades at a central location, readily available for viewing at the site, updated on a weekly basis. See Section 01700 for additional requirements.
- C. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.02 CLEANING AND PROTECTION

- A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.
- B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.
- C. See Section 01710 for additional requirements.
- D. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 - 1. Excessive static or dynamic loading.
 - 2. Excessive internal or external pressures.
 - 3. Excessively high or low temperatures.
 - 4. Thermal shock.
 - 5. Excessively high or low humidity.
 - 6. Air contamination or pollution.
 - 7. Water or ice.
 - 8. Solvents.
 - 9. Chemicals.
 - 10. Light.
 - 11. Radiation.
 - 12. Puncture.
 - 13. Abrasion.

14. Heavy traffic.
15. Soiling, staining, and corrosion.
16. Bacteria.
17. Rodent and insect infestation.
18. Combustion.
19. Electrical current.
20. High-speed operation.
21. Improper lubrication.
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.
26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.
30. Vandalism.

END OF SECTION

A
I

SECTION 01095

REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.01 DEFINITIONS

- A. General: Basic contract definitions are included in the Conditions of the Contract.
- B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the reader locate the reference. Location is not limited.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
- D. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": The term "install" describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- I. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
1. The term "experienced," when used with the term "installer," means having a minimum of 5 previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of authorities having jurisdiction.
 2. Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
 3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.

- J. "Project Site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.02 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on CSI's 16-Division format and MasterFormat's numbering system.
- B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Streamlined Language: The Specifications generally use the imperative mood and streamlined language. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words "shall be" are implied where a colon (;) is used within a sentence or phrase.

1.03 INDUSTRY STANDARDS

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents or the date if stated.
- C. Conflicting Requirements: Where compliance with 2 or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer to the Architect before proceeding for a decision on requirements that are different but apparently equal, and where it is uncertain which requirement is the most stringent.
 - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum acceptable. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.
- E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Acronyms or abbreviations, as referenced in the Contract Documents, are defined to mean the associated names.

- F. Federal Government Agencies: Names and titles of federal government Standard- or Specification-producing agencies are often abbreviated. Acronyms or abbreviations referenced in the Contract Documents indicate names of Standard- or Specification-producing agencies of the federal government.
- 1.04 GOVERNING REGULATIONS AND AUTHORITIES
 - A. Copies of Regulations: Obtain copies of the regulations and retain to be available for reference by parties who have a reasonable need.
- 1.05 SUBMITTALS
 - A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section Specifies Administrative and Procedural Requirements for Project Meetings, Including, but Not Limited To, the Following:
 - 1. Preconstruction conferences.
 - 2. Pre-installation conferences.
 - 3. Progress meetings.
- B. The Contractor's relations with their subcontractors and material suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

1.02 RELATED SECTIONS

- A. Section 01300 - Submittals: Contractor's construction schedule.
- B. Pre-installation Conferences: Refer to individual specification sections for requirements of conferences.

1.03 PRECONSTRUCTION CONFERENCE

- A. Schedule a preconstruction conference before starting construction, at a time convenient to the Owner, Architect, and the City representatives, but no later than 15 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: Authorized representatives of the Owner, Architect, and their consultants; the City Development Review Coordinator, City Public Works, and City Arborist; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
- C. Minutes:
 - 1. The Architect will compile minutes of meeting, and will furnish three copies to the Contractor and required copies to the Owner.
 - 2. Recipients of copies may make and distribute such other copies as they wish.
- D. Agenda: Discuss items of significance that could affect progress, including the following:
 - 1. Tentative construction schedule.
 - 2. Critical work sequencing.
 - 3. Designation of responsible personnel.
 - 4. Procedures for processing field decisions and Change Orders.
 - 5. Procedures for processing Applications for Payment.
 - 6. Distribution of Contract Documents.
 - 7. Submittal of Shop Drawings, Product Data, and Samples.
 - 8. Procedures for communication chain of command.
 - 9. Preparation of record documents.
 - 10. Use of the premises and access to site.
 - 11. Parking availability.
 - 12. Office, work, and storage areas.
 - 13. Equipment deliveries and priorities.
 - 14. First aid.

15. Security.
16. Housekeeping.
17. Working hours.
18. Noise and dust control.

1.04 PRE-INSTALLATION CONFERENCES

- A. Conduct a pre-installation conference at the Project Site before each construction activity that requires coordination with other construction.
- B. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.
 1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related Change Orders.
 - d. Purchases.
 - e. Deliveries.
 - f. Shop Drawings, Product Data, and quality-control samples.
 - g. Review of mockups.
 - h. Possible conflicts.
 - i. Compatibility problems.
 - j. Time schedules.
 - k. Weather limitations.
 - l. Manufacturer's recommendations.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Acceptability of substrates.
 - p. Temporary facilities.
 - q. Space and access limitations.
 - r. Governing regulations.
 - s. Inspecting and testing requirements.
 - t. Required performance results.
 - u. Recording requirements.
 - v. Protection.
 2. Record significant discussions and agreements and disagreements of each conference, and the approved schedule. Promptly distribute the record of the meeting to everyone concerned, including the Owner and the Architect.
 3. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.05 PROGRESS MEETINGS

- A. Conduct progress meetings at the Project Site at monthly intervals. Coordinate dates of meetings with the Owner and the Architect, and with preparation of the payment request.
- B. Attendees: In addition to representatives of the Owner, Contractor and the Architect, Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the

Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.
 2. Field observations, problems, and decisions.
 3. Identification of problems which impede planned progress.
 4. Status of submittals.
 5. Review of off-site fabrication or delivery schedule problems.
 6. Planned progress during succeeding work period.
 7. Coordination of projected progress.
 8. Maintenance of quality and work standards.
 9. Review of Proposal Requests and Change Orders.
 10. Effect of proposed changes on progress schedule and coordination.
 11. Review and action on payment requests.
 12. Other business relating to Work.
- D. Reporting: No later than 5 days after each meeting, the Architect will distribute minutes of the meeting to each party present and to parties who should have been present. The notes will include a brief summary, in narrative form, of progress since the previous meeting and report.
1. Schedule Updating: Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Construction Schedule.
- B. Submittal Schedule.
- C. Shop Drawings.
- D. Product Data.
- E. Samples.
- F. Quality Assurance Submittals.
- G. Maintenance Manuals.
- H. Test Reports.
- I. Warranties.

1.02 DEFINITIONS

- A. Field samples are full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to establish the standard by which the Work will be judged.
- B. Mockups are full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

1.03 RELATED SECTIONS

- A. Section 01630 - Substitutions and Product Options: Procedures for submitting product substitutions.

1.04 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - 3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
 - a. Allow 2 weeks for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow 2 weeks for reprocessing each submittal.

- d. Job delays occasioned by requirement of resubmission of samples, shop drawings, and product data not in accordance with Contract Documents are Contractor's responsibility and will not be considered valid justification for extension of time. Schedule ample time to allow for resubmittals and delivery time.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
- 1. Provide a space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 - 2. Provide a space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Architect/Engineer's review and approval markings and the action taken.
 - 3. Include the following information on the label for processing and recording action taken.
 - a. Submittal number.
 - b. Project name.
 - c. Date.
 - d. Name and address of the Architect.
 - e. Name and address of the Contractor.
 - f. Name and address of the Subcontractor.
 - g. Name and address of the Supplier.
 - h. Name of the Manufacturer.
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. The Architect will not accept submittals received from sources other than the Contractor.
- 1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
- D. Submittals will be returned to the Contractor without checking if, in the opinion of the Architect, they have been submitted in violation of specified procedures, inadequately checked by the Contractor, or are inadequate and in substantial error.

1.05 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 30 days after the date established for "Commencement of the Work."
- 1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values."
 - 2. Within each time bar, indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
 - 3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
 - 4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.
 - 5. Coordinate the Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other schedules.
 - 6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

- B. Phasing: On the schedule, show how requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner affect the sequence of Work.
- C. Work Stages: Indicate important stages of construction for each major portion of the Work, including submittal review, testing, and installation.
- D. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.
- E. Cost Correlation: At the head of the schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of Work performed as of the dates used for preparation of payment requests.
 - 1. Refer to Section 01027 - Applications for Payment for cost reporting and payment procedures.
- F. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
 - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- G. Schedule Updating: Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.06 SUBMITTAL SCHEDULE

- A. After development and acceptance of the Contractor's Construction Schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for submittal of the Construction Schedule.
 - 1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule.
 - 2. Prepare the schedule in chronological order. Provide the following information:
 - a. Scheduled date for the first submittal.
 - b. Related Section number.
 - c. Submittal category (Shop Drawings, Product Data, or Samples).
 - d. Name of the subcontractor.
 - e. Description of the part of the Work covered.
 - f. Scheduled date for resubmittal.
 - g. Scheduled date for the Architect's final release or approval.
- B. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
 - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- C. Schedule Updating: Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.07 SHOP DRAWINGS

- A. Submit newly prepared information drawn accurately to scale. Mark with dark colored pen, encircle, or otherwise indicate deviations from the Contract Documents. Do not use highlighter. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
- B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
 - 1. Dimensions.
 - 2. Identification of products and materials included by sheet and detail number.
 - 3. Compliance with specified standards.
 - 4. Notation of coordination requirements.
 - 5. Notation of dimensions established by field measurement.
 - 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 36 by 48 inches (890 by 1220 mm).
 - 7. Initial Submittal: 1 sepia and 2 prints. Sepia will be returned to the Contractor for reproduction and distribution.
 - 8. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

1.08 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
 - 1. Mark, with dark colored pen, each copy to show applicable choices and options. Do not use highlighter. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Show performance characteristics and capacities.
 - b. Show dimensions and clearances required.
 - c. Show wiring or piping diagrams and controls.
 - d. Manufacturer's printed recommendations.
 - e. Compliance with trade association standards.
 - f. Compliance with recognized testing agency standards.
 - g. Application of testing agency labels and seals.
 - h. Notation of dimensions verified by field measurement.
 - i. Notation of coordination requirements.
 - j. Delete data not related to this Project or mark "VOID" as applicable.
 - 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 - 3. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
 - 4. Submittals: Submit 1 copy of each required submittal; 1 copy will be returned for reproduction and distribution.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - 5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.09 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
1. Mount or display Samples in the manner to facilitate review of qualities indicated. Prepare Samples to match the Architect's sample. Include the following:
 - a. Specification Section number and reference.
 - b. Generic description of the Sample.
 - c. Sample source.
 - d. Product name or name of the manufacturer.
 - e. Compliance with recognized standards.
 - f. Availability and delivery time.
 2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least 3 multiple units that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 - c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.
 - d. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.
 3. Submittals: Submit two full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard and optional choices as specified. Correspondence indicating section of samples will be returned for reproduction and distribution.
- B. Distribution of Correspondence: Prepare and distribute correspondence to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
1. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.10 QUALITY ASSURANCE SUBMITTALS

- A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.
- B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.
1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
- C. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 1 Section "Quality Control."

1.11 MAINTENANCE MANUALS

- A. Submit Maintenance Manuals as required in Section 01700 - Contract Closeout.

1.12 TEST REPORTS

- A. Classify each inspection and test report as being either "Shop Drawings" or "product data" depending on whether the report is specially prepared for the project, or a standard publication of workmanship control testing at the point of production. Process inspection and test reports accordingly.

1.13 WARRANTIES

- A. Submit warranties as required in Section 01700 - Contract Closeout.

1.14 ARCHITECT'S ACTION

- A. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.
 - 1. The Architect's marking of "Approved" means submittal has been reviewed for general conformance to the contract documents only and does not mean unqualified acceptance. The Contractor is fully responsible for compliance with the contract documents.
- B. Action Stamp: The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:
 - 1. Final Unrestricted Release: When the Architect marks a submittal "Approved," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
 - 2. Final-But-Restricted Release: When the Architect marks a submittal "Approved as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
 - 3. Returned for Resubmittal: When the Architect marks a submittal "Not Approved" or "Revise and Resubmit", do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
 - a. Do not use, or allow others to use, submittals marked "Not Approved" or "Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
 - 4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "Action Not Required."
- C. Unsolicited Submittals: The Architect will return unsolicited submittals to the sender without action.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for quality-control services.
- B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.02 RESPONSIBILITIES

- A. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum.
 - 1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.
 - 2. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.
- B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
 - 1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
- C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
 - 1. Provide access to the Work.
 - 2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.

3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
 4. Provide facilities for storage and curing of test samples.
 5. Deliver samples to testing laboratories.
 6. Provide the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
 7. Provide security and protection of samples and test equipment at the Project Site.
- D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
1. The agency shall notify the Architect and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
 3. The agency shall not perform any duties of the Contractor.
- E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.03 SUBMITTALS

- A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service.
1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Ambient conditions at the time of sample taking and testing.
 - k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on retesting.

1.04 QUALITY ASSURANCE

- A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are pre-qualified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.
- B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.
- C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary Utilities Include, but Are Not Limited To, the Following:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
 - 3. Temporary enclosures and heat.
 - 4. Ventilation.
 - 5. Telephone service.
 - 6. Sanitary facilities, including drinking water.
- C. Support Facilities Include, but Are Not Limited To, the Following:
 - 1. Field offices and storage sheds.
 - 2. Temporary enclosures.
 - 3. Hoists and temporary elevator use.
 - 4. Temporary project identification signs and bulletin boards.
 - 5. Waste disposal services.
 - 6. Construction aids and miscellaneous services and facilities.
- D. Security and Protection Facilities Include, but Are Not Limited To, the Following:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, and lights.
 - 3. Environmental protection.

1.02 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 - 1. Building code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, fire department, and rescue squad rules.
 - 5. Environmental protection regulations.
- B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
 - 1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."
 - 2. The Contractor is responsible for the implementation, monitoring, and maintenance of job site safety program for the duration of the contract.
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.03 PROJECT CONDITIONS

- A. Temporary Utilities: At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.
- B. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- C. Water: Provide potable water approved by local health authorities.

2.02 EQUIPMENT

- A. General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4-inch (19-mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet (30 m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Field Office: The Contractor may provide a field office as he deems necessary. None is required.
- H. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

- I. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Connect to existing service.
 - 1. Arrange for a time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
- B. Temporary Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
- C. Temporary Lighting: Provide temporary lighting with local switching.
 - 1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions. A minimum of 80 foot candles shall be supplied at mid-height of surfaces for taping, painting and finish work.
- D. Temporary Heat: Provide if necessary.
- E. Temporary Telephones: Provide temporary telephone service throughout the construction period for all personnel engaged in construction activities.
 - 1. Make arrangements and pay costs for installation and operation of telephone service for Contractor's Office, including monthly charges and necessary accounting of toll calls. Long distance and toll calls shall be paid for by the party making the call.
- F. Sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
 - 1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
- G. Toilets: Install self-contained toilet units.

3.03 SUPPORT FACILITIES INSTALLATION

- A. Locate storage sheds, and other temporary construction and support facilities for easy access.

1. Maintain support facilities until Substantial Completion. Remove after Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Field Office: If a field office is provided, equip with a First Aid kit. Keep the office clean and orderly for use for small progress meetings.
- C. Temporary Stairs, Ladders, Ramps, Runways, Hoists:
 1. Furnish and maintain all equipment, such as temporary stairs, ladders, ramps, scaffolds, hoists, runways, derricks, and chutes, as required for the proper execution of the work.
- D. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.
- B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
 1. Locate fire extinguishers where convenient and effective for their intended purpose.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
 4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
- C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting.
- D. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from Owner or neighbors near the site.

3.05 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 1. Maintain operation of temporary enclosures, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 2. Protection: Prevent water-filled piping from freezing.

- C. Restoration of Roadways and Pavement: Roadways, pavements and curbs that are broken, damaged, settled, or otherwise defective as a result of receiving, handling, storage of materials or the performance of any work under this Contract, shall be fully restored to the satisfaction of the authorities having jurisdiction.
- D. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities furnished by the Contractor are the Contractor's property.
 2. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
 - a. Irrigation system.
 - b. Replace significantly worn parts and parts subject to unusual operating conditions.
 - c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION

SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 01300 - "Submittals" specifies requirements for submittal of the Contractor's Construction Schedule and the Submittal Schedule.
 - 2. Section 01630 - "Substitutions And Product Options" specifies administrative procedures for handling requests for substitutions made prior to the bid.

1.02 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
 - b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.
 - 2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.03 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
 - 1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.
 - a. Failure to order, obtain required submittals, and purchase in a timely manner, well in advance of when product is needed, will not be considered as a failure of the supplier to deliver, and will not be considered as an unavailable product. The contractor and subcontractor shall adjust the work schedule to accommodate the failure to properly order material in advance, and take whatever actions necessary to obtain the specified product as quickly as possible.

- B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.
1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.
- 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.

2. Semiproprietary Specification Requirements: Where Specifications name 2 or more products or manufacturers, provide 1 of the products indicated. No substitutions will be permitted.
 - a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal," comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.
 - a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.
6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
7. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.
8. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern, and texture from the product line selected.
9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01630

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Substitution procedures during the bid period shall be followed to provide equality of bids. The requirements for "Substitutions" are defined in the Instructions to Bidders. The Architect and Owner will not consider substitutions submitted after bids are received. Contractors submitting substitutions after bids are received will not be given additional compensation for rejected submittals.

1.02 SUBSTITUTIONS

- A. Submit two copies of request for substitution. Include in the request:
1. Complete data substantiating compliance of proposed substitution with Contract Documents.
 2. For Products:
 - a. Product identification including manufacturer's name and address.
 - b. Manufacturer's Literature:
 - (1) Product description.
 - (2) Performance and test data.
 - (3) Reference standards.
 - c. Samples.
 - d. Name and address of similar projects on which product was used, and date of installation.
 3. Itemized comparison of product substitution with product specified.
 4. Changes in construction schedule.
 5. Accurate cost data on proposed substitution in comparison with product specified.
- B. In Making Request for Substitution, the Contractor Represents:
1. He has investigated proposed product or method and determined that it is equal or superior in all respects to that specified.
 2. He will provide the same or greater guarantee for substitution as for product specified.
 3. He will coordinate installation of accepted substitution into work, making such changes as required for work to be completed.
 4. He waives all claims for additional costs related to substitution in which it becomes apparent before, during or after installation.
 5. Contractor requesting substitution shall bear additional costs to all parties due to his substitution, including Architect's fees.
- C. Substitutions Will Not Be Considered If:
1. They are indicated or implied on shop drawings or project submittals without formal request.
 2. Acceptance will require substantial revision of Contract Documents.
 3. Not readily serviceable in the area or may cause the Owner to stock extra parts.
- D. Substitutions not approved before the last addendum is distributed shall not be considered in the Base Bid.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section Includes Administrative and Procedural Requirements for Contract Closeout Including, but Not Limited To, the Following:
1. Inspection procedures.
 2. Project record document submittal.
 3. Operation and maintenance manual submittal.
 4. Submittal of warranties.
 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

1.02 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
 - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 2. Occupancy permits and similar approvals.
 3. Advise the Owner of pending insurance changeover requirements.
 4. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 5. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 6. Submit record drawings, maintenance manuals and similar final record information.
 7. Deliver tools, spare parts, extra stock, and similar items.
 8. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
 9. Test/adjust/balance records.
 10. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
 11. Complete final cleanup requirements, including touchup painting.
 12. Touch up and otherwise repair and restore marred, exposed finishes.
- B. When Contractor Considers the Work Is Substantially Complete, the Contractor Shall Submit to the Architect:
1. A written notice that the work, or designated portion thereof, is substantially complete.
 2. A list of items to be completed or corrected.
- C. Within a reasonable time after receipt of such notice, Architect will make an inspection to determine the status of completion.

- D. Should Architect determine that the work is not substantially complete:
 1. Architect will promptly notify the Contractor in writing, giving the reasons therefor.
 2. Contractor shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the Architect.
 3. Architect will reinspect the work.
- E. When Architect Concurs That the Work Is Substantially Complete:
 1. Prepare a Certificate of Acceptance accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect.
 2. Submit the Certificate to Owner and Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

1.03 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
 1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.
 4. Submit consent of surety to final payment if project is bonded.
 5. Submit a final liquidated damages settlement statement, if any.
 6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. When Contractor Considers the Work Is Complete, The Following Written Certification Shall Be Submitted:
 1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents.
 4. Equipment and systems have been tested in the presence of the Owner's representative, are operational, and instructional meeting with Owner has been held.
 5. Work is completed and ready for final inspection.
- C. Architect will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- D. Should Architect Consider That the Work Is Incomplete or Defective:
 1. Architect will promptly notify the Contractor in writing, listing the incomplete or defective work.
 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Architect that the work is complete.
 3. Architect will reinspect the work.
- E. When the Architect finds that the work is acceptable under the Contract Documents, the Architect shall request that the Contractor make closeout submittals.

1.04 INSPECTION FEES

- A. If the Architect Perform Reinspections Due to Failure of the Work to Comply with the Claims of Status of Completion Made by the Contractor, Or, Should the Contractor fail to complete the work, Or, Should the Contractor fail to promptly correct warranty items or work later found to be deficient::
 1. Owner will compensate Architect for such additional services.
 2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

- B. If the Work is not completed by the date set in the agreement, and the Architect needs to perform additional Contract Administrative and on site observation duties:
 1. Owner will compensate Architect for such additional services.
 2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.05 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which Drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
 3. Note related change-order numbers where applicable.
 4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

1.06 MAINTENANCE MANUALS

- A. Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
 1. Emergency instructions.
 2. Spare parts list.
 3. Copies of warranties.
 4. Wiring diagrams.
 5. Recommended "turn-around" cycles.
 6. Inspection procedures.
 7. Shop Drawings and Product Data.
 8. Fixture lamping schedule.
- B. Where the above described "Maintenance Manual" data is called for under separate sections, include it in the "Maintenance Manual" described in this Article.
- C. Arrange data in "Maintenance Manual" in same order as the Specifications.
- D. Provide indexed set of approved Shop Drawings and product data for Divisions 1 through 16 inclusive as part of "Maintenance Manual" submission.
- E. Include written operating instructions as part of "Maintenance Manual".
- F. Provide the Owner with 2 sets of Maintenance Manuals.

1.07 WARRANTIES

- A. Refer to Section 01740 - Warranties and Bonds for closeout requirements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 CLOSEOUT PROCEDURES

- A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:
1. Maintenance manuals.
 2. Record documents.
 3. Spare parts and materials.
 4. Tools.
 5. Lubricants.
 6. Fuels.
 7. Identification systems.
 8. Control sequences.
 9. Hazards.
 10. Cleaning.
 11. Warranties and bonds.
 12. Maintenance agreements and similar continuing commitments.
- B. As Part of Instruction for Operating Equipment, Demonstrate the Following Procedures:
1. Startup.
 2. Shutdown.
 3. Emergency operations.
 4. Noise and vibration adjustments.
 5. Safety procedures.
 6. Economy and efficiency adjustments.
 7. Effective energy utilization.

3.02 FINAL CLEANING

- A. Refer to Section 01710 - Cleaning for requirements at closeout.

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Execute cleaning, during progress of the work, and at completion of the work, as required by General Conditions.

1.02 RELATED SECTIONS

- A. Conditions of the contract.
- B. Each Specification Section: Cleaning for specific products or work.

1.03 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with all local codes, ordinances, regulations and anti-pollution laws.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION

- A. Execute periodic cleaning, not less than weekly, to keep the work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces prior to closing the space.
- D. Remove waste materials, debris and rubbish from the site periodically, and dispose of at legal disposal areas away from the site.

3.02 DUST CONTROL

- A. Clean interior spaces prior to the start of finish painting, and continue cleaning on an as-needed basis until painting is finished.
- B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.03 FINAL CLEANING

- A. Final cleaning before final inspection. Interior and exterior areas of the building shall be cleared of all rubbish and thoroughly cleaned by the Developer/Contractor, including the following:
 - 1. All construction facilities, debris, and rubbish shall be removed from the Owner's property and legally disposed of.
 - 2. All finished surfaces including floors, walls and ceilings shall be swept, dusted, vacuumed, washed, waxed and polished. This includes cleaning of the work of all finished trades where needed, whether or not cleaning for such trades is included in their respective Sections.
 - 3. Pipe and duct spaces, chases, and furred spaces shall be left thoroughly cleaned.
 - 4. Clean interior and exterior of casework and millwork.
 - 5. All ceilings, wall surfaces, floors, door frames, hardware, metal work, glass, enameled metals, and the like, shall be cleaned.
- B. Broom clean exterior paved surfaces, rake clean other surfaces of the grounds disturbed by construction.
- C. Prior to final completion or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

1.02 RELATED SECTIONS

- A. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
- B. Section 01700 - Contract Closeout: Closeout requirements for warranties.
- C. Specific requirements for warranties for the Work and products and installation that are specified to be warranted, are included in the individual Sections of Divisions 2 through 16.
- D. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- E. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.03 WARRANTIES

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
 - 1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
 - 1. Refer to individual Sections of Division 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.
- C. Form of Submittal: At Final Completion compile 2 copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

- D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8 1/2" x 11 " paper.
 - 1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
 - 2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS," the Project title or name, and the name of the Contractor.
- E. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.04 WARRANTY REQUIREMENTS

- A. **Related Damages and Losses:** When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. **Reinstatement of Warranty:** When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. **Replacement Cost:** Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefitted from use of the Work through a portion of its anticipated useful service life.
- D. **Owner's Recourse:** Written warranties made to the Owner are in addition to implied warranties, and shall not limit available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. **Rejection of Warranties:** The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entitles required to countersign such commitments are willing to do so.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 02060

DEMOLITION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Demolition and removal of structures.
- B. Demolition and removal of selected portions of buildings.
- C. Disconnecting, capping or sealing, and abandoning site utilities in place.
- D. Demolition and removal of selected site elements.
- E. Patching and repairs.

1.02 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.
- B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.
- C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
- D. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.03 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.
- B. Carefully remove items indicated to be salvaged in a manner to prevent damage and deliver promptly to the Owner.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Section 01300.
- B. Proposed dust-control measures.
- C. Proposed noise-control measures.
- D. Schedule of Demolition Activities Indicating the Following:
 - 1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.

- E. Inventory of items to be removed and salvaged.
- F. Inventory of items to be removed by Owner.
- G. Record Drawings at Project closeout according to Section 01700 "Contract Closeout."
 - 1. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.
- H. Landfill records indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.05 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed demolition Work similar to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Predemolition Conference: Conduct conference at Project site to comply with preinstallation conference requirements of Section 01200 "Project Meetings."

1.06 PROJECT CONDITIONS

- A. Owner assumes no responsibility for actual condition of buildings to be demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Asbestos, Arsenic, and Lead Paint: An asbestos abatement contractor will be retained by the Owner. Arsenic contaminated soil will be removed by a separate abatement contractor retained by the previous land owner. If any materials suspected of containing asbestos, arsenic, or lead paint are encountered, do not disturb the materials. Immediately notify the Architect and the Owner.
 - 1. Asbestos, arsenic, or lead paint will be removed by Owner before start of the Work in the affected area.
- C. Storage or sale of removed items or materials on-site will not be permitted.

1.07 SCHEDULING

- A. Arrange demolition schedule so as not to interfere with other contractors' on-site operations.

PART 2 - PRODUCTS

2.01 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect.
- E. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.02 UTILITY SERVICES

- A. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to governing authorities.
 - a. Provide not less than 72 hours' notice to Owner if shutdown of service is required during changeover.
- B. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving buildings to be demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
- C. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.03 PREPARATION

- A. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- B. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.
 - 1. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.

- C. Protect existing work that is to remain in place, that is to be re-used, or that is to remain the property of the Owner. Take all necessary precautions to insure that no damage occurs to these surfaces.

3.04 POLLUTION CONTROLS

- A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.
 - 1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before start of demolition.

3.05 BUILDING DEMOLITION

- A. Demolish buildings completely and remove from the site. Use methods required to complete Work within limitations of governing regulations and as follows:
 - 1. Locate demolition equipment throughout the building and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 2. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
 - 3. Demolish concrete and masonry in small sections.
 - 4. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 5. Break up and remove concrete slabs on grade, unless otherwise shown to remain.
- B. Below-Grade Construction: Demolish foundation walls and other below-grade construction, as follows:
 - 1. Remove below-grade construction, including foundation walls, to at least 36 inches below grade.
 - 2. Break up and remove below-grade concrete slabs, unless indicated to remain.
- C. Filling Below-Grade Areas: Completely fill below-grade areas and voids resulting from demolition of buildings and pavements with soil materials according to requirements specified in Division 2 Section "Earthwork."
- D. Damages: Promptly repair damages to adjacent facilities caused by demolition operations.

3.06 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide labor and materials to complete the earthwork within the limit of work as shown on the Drawings and/or herein specified.
1. Clearing and preparation of site.
 2. Stripping of topsoil
 3. Protection.
 4. Excavation:
 - a. General excavation to lines and grades indicated.
 - b. Trench excavation for footings, piers, etc.
 - c. Excavation for buried pipes, wires and conduits under ground floor.
 - d. Excavation for buried structures, tanks, pipes, wires and conduits outside the building.
 5. General exterior rough grading, cutting and filling as required.
 6. Filling and backfilling for excavations, including furnishing of extra material required.
 7. Compacted crushed stone under building.
 8. Compacted gravel for roadways, drives and walks.
 9. Shoring, bracing, sheathing, and cribbing as required and removal of the same.
 10. Pumping of excavation as may be required.
 11. Crushed stone.
 12. Rip rap.
 13. Sports playfield surfacing.

1.02 SUBMITTALS

- A. Submit manufacturer's product literature and test results for approval on all materials in accordance with Section 01300.

1.03 ALTERNATES

- A. Alternate prices are required for Beam Clay Infield Surfacing. Refer to Section 01030 for Alternates.

1.04 PROTECTION

- A. Excavation, sidewalks, trenches, etc., shall be kept properly fenced and guarded. Lights shall be provided and maintained wherever and whenever necessary. Trees which are within the area of operations (and are to remain) shall be protected with suitable boarding or fencing.
- B. Shoring: Do shoring, bracing, etc., necessary to support soil adjoining the excavation, in compliance with OSHA and all other Federal, State, and local codes.
- C. Protect newly filled areas from traffic and erosion. Repair and re-establish grades to the specified tolerances in settled, eroded and rutted areas. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, re-shape and compact to the required density prior to further construction.
- D. Protect structures, utilities, sidewalks, culverts, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Repair, or have repaired, all damage to existing utilities, structures, culverts, pavement, lawns, other

public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Architect, the utility, the property owner, and the Owner.

1.05 QUALITY ASSURANCE

- A. Compaction Control: Wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place dry density divided by the maximum dry density and multiplied by 100.
- B. The maximum dry density shall be the dry density at optimum moisture as determined by ASTM D 1557-91 "Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort," latest revision. Method A, B or C shall be selected by the testing agency based on the gradation results of the sample taken. Adjustments to the laboratory density for oversize aggregate shall be made (if required) as specified in ASTM D 1557-91. These adjustments shall be made in accordance with ASTM D 4718-87, latest revision.
- C. The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone Method, Designation D 1556; or density of soil and soil aggregate in-place by nuclear methods (shallow depth), Designation D2922.
- D. Materials used on-site are subject to the approval of the Architect and Geotechnical Engineer and unsuitable materials shall be removed from the site.

1.06 MEASUREMENTS AND CLASSIFICATION

- A. Measurements: Measurements used for calculating amounts of excavation shall be within a vertical line placed 2'-0" outside the wall or 1'-0" outside footing, whichever is greater, and to the depth indicated. Trench excavation for underground utilities shall be based on a trench width 2'-6" greater than the diameter of the pipe with vertical walls, and the depth of 4" below the pipe. Excavation shall be taken to a minimum of 1'-0" below finish floor, and slabs on grade, unless a different backfill thickness is indicated.
- B. Classification:
 1. Earth excavation includes any and all material not having the qualities to classify as rock excavation.
 2. Rock excavation includes the satisfactory removal and disposal of solid rock material which cannot be removed without systematic drilling and blasting. This includes rock material which is in ledges, bedded deposits, unstratified masses, and conglomerate deposits which are so firmly cemented that they possess the characteristics of solid rock. Fragmented "weathered" rock which can be removed by excavation equipment with "ripper" teeth will be considered earth. Boulders will be included only if each is two (2) cubic yard size or greater and cannot be excavated without drilling and blasting or pneumatic splitting. When, during the progress of excavation, ledge is encountered, the Architect shall be notified. Adjustments will be by unit price. The Architect shall determine the extent of rock excavation and classification.
 3. The unit price for rock excavation is net and is not subject to credit for any other material which it may replace.
 4. Excavation which measures 6'-0" or less in width, regardless of length, shall be classified as trench excavation. Measurements to be determined as outlined herein.
 5. Excavation which does not meet the above requirements for trench excavation shall be classified as open excavation.
 6. The Owner will take credit for excavation omitted through changes in the Plans and/or Specifications at the unit price stated.
- C. Rock excavation shall not be included under the basic Contract Price. Rock excavation required for the building project will be paid for on the basis of unit prices set forth in the Bid Form. The extent of such rock will be subject to verification and approval by the Architect, with rock contour survey and calculations provided by the Contractor.

1.07 SOIL TESTING

- A. Soil compaction control including laboratory testing, on site testing, and geotechnical inspection will be done by a testing agency hired by the Owner.
- B. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate sources if proposed material does not meet the specifications. Submit test results to the Architect.
- C. Tests of soil as delivered may be performed from time to time. Materials in question may not be used, pending test results. Remove rejected material and replace with new, approved soil.
- D. Cooperate with the laboratory in obtaining field samples of in-place, bank-run, or stockpiled materials. Samples should be obtained by laboratory personnel from various suppliers, but other individuals may obtain and deliver samples if approved by the Architect.
- E. Coordinate schedule with testing agency and Architect to allow testing agency representative to be on site prior to foundation formwork and at the start of filling operations.
- F. The Contractor shall bear cost of retesting when initial test results indicate non-compliance with specifications, or when alternate sources are submitted.
- G. In-place Compaction Test Frequency for Each Layer Placed:
 Subgrade, Proof-compact Building and Paved Areas: 1 test per 300 sq. ft.
 Building Interior Fill: 1 test per 300 sq. ft.
 Parking, Roads and Walks: 1 test per 3000 sq. ft.
 Trench - Utilities: 1 test per 100 lin. ft.

PART 2 - PRODUCTS

2.01 GRAVEL BASE AND SUB-BASE

- A. Clean screened or crushed gravel free from organic material or clay. The portion that passes a 3" sieve shall conform to the following gradation requirements:

SIEVE SIZE	%PASSING	
	Base	Sub-Base
2"	100	-
1"	80 - 100	50 - 100
1/2"	35 - 75	-
1/4"	25 - 60	25 - 70
#40	0 - 25	0 - 30
#200	0 - 5	0 - 7

- B. Maximum size stone for base passes 2" sieve. Maximum size stone for sub-base passes 6" sieve.

- C. Gradations in the table represent the limits which shall determine suitability of gravel for use from the sources of supply. The gradations shall be uniformly graded from course to fine within the limits designated in the table and shall not vary from the low limit on one sieve to the high limit on the adjacent sieves, or vice versa.

2.02 GRANULAR BORROW

- A. Uniformly graded bank-run gravel which can be compacted to the required density, free of debris, roots, topsoil, vegetable matter, frozen material, and any other deleterious material. The portion that passes a 3" sieve shall meet the following gradation requirements:

SIEVE SIZE	PERCENT PASSING BY WEIGHT
#40	0 - 50
#200	0 - 15

- B. Maximum size stone passes 6" sieve.

2.03 GRANULAR BEDDING MATERIAL

- A. Clean sand or gravel free from organic material or clay conforming to the following gradation:

SIEVE SIZE	PERCENT PASSING BY WEIGHT
2"	100
1/4"	25 - 100
#40	0 - 30
#200	0 - 7

2.04 COMMON BORROW

- A. Soil which is free from vegetable matter, lumps of clay, perishable rubbish or peat, or frozen material, which can be placed and compacted to the required densities. 8-inch maximum stone size.

2.05 BEDDING SAND

- A. Clean, coarse, sharp, durable particles free from organic material or clay conforming to the following gradations:

SIEVE SIZE	PERCENT PASSING
3/8"	100%
#4	95 - 100
#16	50 - 85
#50	10 - 30
#100	2 - 10
#200	0 - 5

2.06 STONES FOR RIP-RAP

A. Size the stone mixture such that 50% of the stones, by weight, are larger than the specified d50 size. Stones shall not be schistotic.

B. Plain Rip-Rap: 4" to 12" diameter, hard, sound angular stones, d50 = 6".

SEE ADDENDUM " 1

2.07 CRUSHED STONE

A. Screened or crushed natural stone, free from shale, organic matter and debris conforming to the following gradation: (ASTM C-33 Size No.56)

SIEVE SIZE	PERCENT PASSING
1-1/2"	100%
1"	90 - 100
3/4"	40 - 85
1/2"	10 - 40
3/8"	0 - 15
#4	0 - 5

2.08 FLOWABLE FILL

A. Flowable fill shall consist of a low strength mix of cement, fly ash, fine aggregate, water and an admixture (Darafill, or approved equal). The mix design shall consist of 75 pounds of cement, 2,500 pounds of fine aggregate and 2-1/4 ounces of admixture per cubic yard of fill. Mix design to provide 75 psi at 28 days compressive strength.

2.09 BASEBALL AND SOFTBALL SKINNED AREAS

A. Use 'Hadlock' mix, produced by Blue Rock Inc., Westbrook, ME., well mixed and screened with no stones larger than 3/8". Total thickness of 6". Rototill 4 tons of 'Turface MVP' into the infield mix to a depth of 4". A distributor of Turface is Sportsfield, Inc., Winthrop, ME.

2.10 CLAY PITCHERS MOUND AND BATTERS BOX

A. Consist of pure brown clay, 10" thick. Condition each mound and batters box by adding 100 lbs. of 'Turface MVP', raked or nail-dragged into the top surface.

2.11 BEAM CLAY INFIELD MIX - ALTERNATE

A. Substitute "Beam Clay Infield Mix", produced by Partec Peat Corporation (1-800-247-2326) in place of 'Hadlock' infield mix and clay pitchers mound and batters box specified above.

2.12 BURIED WARNING AND IDENTIFICATION TAPE

A. For non-metallic pipe use metallic core or metallic-faced, acid and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. For metallic pipe use non-metallic polyethylene plastic warning tape. Provide tape on rolls, 3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted

in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.

- B. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Metallic tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep.

WARNING TAPE COLOR CODES	
Yellow	Electric
Yellow	Gas, Oil, Dangerous Materials
Orange	Telephone and other Communications
Blue	Water Systems
Green	Sewer Systems
White	Steam Systems
Gray	Compressed Air

SEE ADDENDUM # 1

PART 3 - EXECUTION

3.01 CLEARING AND SITE PREPARATION

- A. Trees, brush, boulders, etc., within the limits of grading shall be removed from the site (except trees indicated as remaining or undisturbed) including grubbing and removal of organic material, stumps and roots. Prior to tree cutting, contact the Architect and the City Arborist(Jeff Tarling -tel.874-8793) to review and approve the tree protection limits and methods.
- B. Remove debris and deposit it in suitable disposal areas as specified below. Conform to Federal, State and local solid waste disposal regulations.
- C. Remove fences, catchbasin and manhole frames and covers, light poles, signs, and other site features to be salvaged and stock-piled for later installation, or disposed of, as directed by the Owner.

3.02 STRIPPING OF TOPSOIL

- A. Topsoil within areas where excavation or filling will occur shall be stripped, cleaned of all rocks and debris and stockpiled on site for use in finish grading.
- B. Prior to re-use, topsoil must conform to the requirements of Section 02930. Soil which does not meet these requirements, either naturally, or by additives supplied by the Contractor, shall be considered common excavated material.

3.03 ROUGH GRADING

- A. Rough grade the area within the limits of work to conform to grades indicated, making provision for finish materials, including necessary cutting and filling. Provide additional material as necessary to complete the rough grading.

3.04 DISPOSAL

- A. Dispose of unsuitable material, organic material, wood waste, rock material, and surplus excavated soil in excess of that required for rough grading off the site in a disposal area obtained by the Contractor. Conform to Federal, State and local solid waste disposal regulations.
- B. If hazardous waste or special waste as defined by the U. S. Environmental Protection Agency or State Department of Environmental Protection is encountered during excavation, the Contractor shall avoid disturbance of that material, and shall notify the Owner immediately. The State Bureau of Oil and Hazardous Waste Control must be notified and consulted prior to disturbance of the waste or contaminated soil. Removal and disposal of contaminated materials is not included in the Contract Bid, since it must be handled as directed by the regulatory agencies on a case-by-case basis.

3.05 REMOVAL OF EXISTING BITUMINOUS PAVEMENT

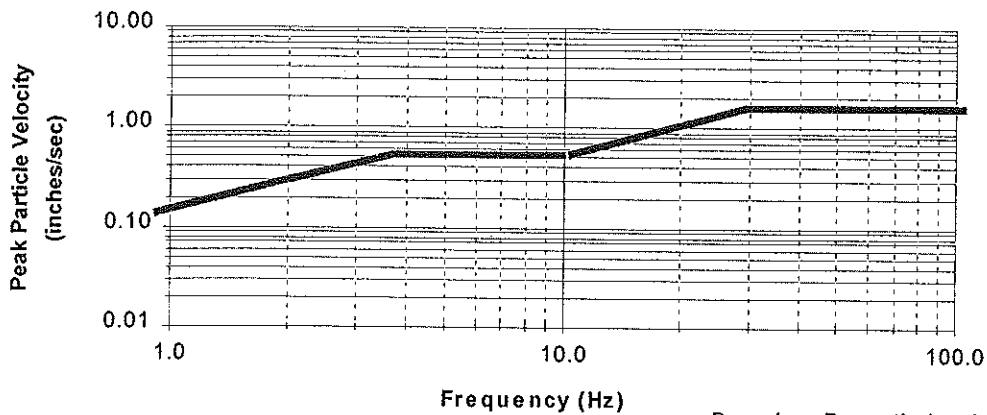
- A. Where it is necessary to excavate and make cuts in bituminous pavement, the Contractor shall saw cut paving along neat straight lines where new pavement meets existing pavement.
- B. Dispose of excavated pavement in suitable off-site recycling disposal area obtained by the Contractor.

3.06 EXCAVATION

- A. Excavation shall be made to the proper depths required by design, including the proper allowance for forms, utilities, etc. Excavation shall be approximately level, clean and clear of loose material. Debris, rock material, organic material or unsuitable material encountered in the excavation shall be removed and disposed of as specified above. Excavation beyond the design limits, made without authorization from the Owner or Geotechnical Engineer, will be refilled with gravel subbase material compacted to 95% maximum dry density at the Contractor's expense.
- B. Excavate the area within the building lines level to 18 inches below the underside of the concrete floor slab. Excavate for pipes, utilities, pits, and incidentals. Proof-roll the sub-grade for footings and slabs to 95% maximum dry density in the presence of the Geotechnical Engineer prior to further construction.
- C. If bearing is not suitable at levels shown on the Drawings, within the design limits, the Architect or Geotechnical Engineer shall be notified so that adjustments in level or changes may be made immediately. The Geotechnical Engineer will determine the extent of excavation of unsuitable material. Payment for excavation of unsuitable material, beyond the design limits, and replacement with granular borrow will be made under the unit price listed in the Bid Form, when the excavation has received prior approval from the Owner or Geotechnical Engineer.
- D. Prevent freezing of the subgrade soils inside the building lines. Freezing of these soils beneath footings and slabs may result in frost heaving or post-construction settlement. If frost penetration occurs, the native soil and overlying fill effected should be removed and replaced, as directed by the Geotechnical Engineer.
- E. Prior to ledge rock blasting, perform a "pre-blast survey" of all structures and wells within 500 ft. of blasting locations. The pre-blast survey firm shall have 5-years experience in similar survey work. For the survey, interview the land owner of the buildings and wells, obtain a certified water test for nitrates and coliform of each well, photograph and videotape glass, plaster, chimneys, concrete foundations, and other masonry components of each structure. When blasting along roadways, take still photos at 50' maximum spacing along the construction area, and videotape the entire construction length with commercial grade equipment. When explosives are used for rock removal, the work shall be done by an experienced blasting firm, with a minimum of 5 years documented experience. Use small charges to minimize particle velocity as shown on the following Frequency vs. Peak Particle Velocity graph and in strict accordance with current Department of Interior Rules 816.61-68 and 817.61-68, and the Blasting Guidance Manual, Office of Surface Mining, Reclamation and Enforcement, covering this type of work.

Blasts shall not exceed these limits at the nearest property line. Prepare a blasting plan in accordance with 30 CFR 816.61, and sound standards in accordance with 816.67. Blasts shall be monitored by seismographs to record the effects at the nearest property line and on structures within the survey area, and demonstrate compliance with the regulations. The seismograph should have a seismic frequency range of 2 to 150 hertz and a sound frequency range of 2 to 500 hertz; and record longitudinal, transverse, and vertical peak particle motion and frequency. Records shall also include location of blast and instrument, depth and number of holes, type and quantity of explosives, type of soil or rock beneath instrument, instrument type, airblast(dB), operator, date, and time. Prior to blasting, obtain all applicable State and local permits, including the City Fire Department permit. Blasts shall be properly covered, using blasting mats. If any peak particle velocity is recorded within a 300' radius which exceeds 1.25 in./sec. it shall be reported to the Owner's representative immediately. Damage to structures caused by improper use of explosives shall be corrected at the Contractor's expense. Avoid blasting which will disturb new building foundations and compacted soil backfill. Following blasting activity, blasting records, pre-blast survey, and seismograph readings shall be compiled in a report and submitted to the Owner.

Frequency vs. Peak Particle Velocity



Based on Rosenthal and Morlock (1987)

- F. Draining of Excavation: The Contractor shall, by use of pumps, or other approved means as may be necessary, prevent the accumulation of water in the excavated areas.
- G. Prior to excavation, obtain confirmation from the Owner and Utility Company that all buried pipes and utilities are located accurately on the Drawings and in the field. Completeness or accuracy of subsurface information is not guaranteed. Obtain the services of 'Dig-Safe' or other qualified detection firm. Provide test pits as necessary to verify location and depth of buried pipes and utilities.
- H. When excavating within State or City right-of-way, remove material immediately and do not stockpile material in road or along edge of trench.

3.07 FILLING AND COMPACTION

- A. General:
 1. Fill shall be compacted in 6" to 12" layers to avoid settlement. In filling against walls or pipelines, the fill shall be placed and compacted on both sides at the same time to avoid undue strain.
 2. Compact fill under pavements and gravel areas to 95% of maximum dry density; and under grass or mulch areas to 90% of maximum dry density.
 3. Provide additional material necessary to complete the filling.

4. Place gravel base material under concrete pads a minimum of 12" deep, compacted to 95% maximum dry density.
5. Fill above underdrain geotextile wrap with gravel sub-base for full depth to ground surface. In sportsfields fill with gravel to the bottom of the loam or skinned infield material.
6. Excavate, grade, and re-compact areas of settlement or improper backfill and compaction, at no additional cost to the Owner.

B. Inside Building Lines:

1. Prior to placing any concrete or soil, obtain approval of the exposed subgrade soil from the Geotechnical Engineer.
2. Do not use excavated native soil beneath the building.
3. Fill from bottom of excavation to within 18 inches of the bottom of the slab with gravel sub-base material. Place an 18-inch layer of crushed stone directly under the slab, following filling of interior trenches. Compact material in 6" to 12" layers, watered to optimum moisture content, to 95% maximum dry density.
4. Fill shall be placed under supervision of a Geotechnical Engineer.

C. Roads, Parking Lots and Walks:

1. Prepare subgrade to proper grade and proof-roll to 95% maximum dry density. Place fill in 6" to 12" layers compacted to 95% maximum dry density.
2. Place gravel sub-base and gravel base courses in 6" to 12" layers compacted to 95% maximum dry density.
3. Do no work when subgrade is muddy or frozen.
4. Finish surface tolerance shall be 3/8" above or below the required grade. Puddling in paved or unpaved areas will not be acceptable except in areas designated as ponds.

SEE ADDENDUM # 1

D. Sewer Lines, Storm Drain Lines and Water Lines:

1. Bed plastic, metal, or concrete pipes on 4-inch layer of granular bedding material compacted to 95% maximum dry density. Fill the first layer to half the height of the pipe, and compact to 95% maximum dry density. Fill to 12 inches over the top of pipe with granular bedding material compacted to 95% maximum dry density. Fill remainder of trench with excavated materials compacted to 95% maximum dry density beneath slabs on grade, paved areas, and gravel areas; or compacted to 90% maximum dry density beneath grassed or mulched areas. Inside building lines use materials specified in paragraph 'B'. Layer thickness shall be 6" to 12".
2. Ductile iron pipe may be placed directly on the prepared subgrade shaped to provide uniform bearing along the entire pipe length, and backfilled with excavated material with no rocks larger than 4-inch diameter within 12 inches of the pipe; compaction as described above.
3. Provide a 6-inch bedding layer between pipes and ledge rock.

E. Underslab Utilities: Surround underslab piping and conduit with 6 inches of sand or granular bedding material, compacted to 95% maximum dry density.

F. Site Utility Lines:

1. Electrical Conduits: Bury beneath finish grade a minimum of 29 inches to top of conduit, or as required by the National Electrical Code or local utility company, whichever is deeper. Surround conduits by a minimum of 6 inches of sand or bedding material, compacted to 95% maximum dry density.
2. Telephone and Communication Conduits: Bury beneath finish grade a minimum of 29 inches to top of conduit, or as required by the local utility company, whichever is deeper. Surround conduits by a minimum of 6 inches of sand or bedding material, compacted to 95% maximum dry density.

3.08 RIP-RAP

- A. The stones shall be placed with their beds at right angles to the slope, the larger stones being used in bottom courses. They shall be laid in close contact so as to break joints, and in such manner that the weight of the stone is carried by the earth and not the adjacent stones.

- B. The spaces between the larger stones shall be filled with spalls securely rammed into place. The finished work shall present an even, tight and reasonably smooth surface conforming to the required contour, and have a neat orderly appearance without scattered stones.

END OF SECTION

SECTION 02270

SLOPE PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide temporary erosion control for entire duration of project.
- B. Provide permanent erosion control measures.
- C. Prepare and submit a National Pollutant Discharge Elimination System (NPDES) Permit.

1.02 SCHEDULING

- A. Provide to the Architect, in writing, a time schedule outlining the sequence of construction for site work.
- B. Plan the sequence of construction so that the smallest practical area of land is exposed at any one time during construction.
- C. This project is subject to State Department of Environmental Protection and City of Portland Planning review. This section contains dates and time limits which are mandatory. Failure to meet these requirements may result in DEP enforcement action, such as work stoppage, fines, etc.

1.03 SITE CONDITIONS

- A. Take necessary steps to prevent soil erosion. Refer to publications of the Maine DEP and the Maine Soil and Water Conservation Commission for additional prevention measures to stop soil erosion and follow DEP "Best Management Practices." The Contractor shall conduct his operations in conformity with all Federal and State permit requirements concerning water, air, or noise pollution, or the disposal of contaminated or hazardous materials. Erosion control measures shown on the Plans are minimum only and are not intended to be complete. Satisfy the current requirements of the regulatory agencies.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Erosion Control Mesh: Open weave, single jute yarn of loosely twisted construction, not varying in thickness by more than 1/2 its normal diameter. The woven material shall weigh 0.9 pounds per square yard. Synthetic mesh material may be used as approved by the Architect.
- B. Erosion Control Blanket: Synthetic fiber matrix sandwiched between heavy duty UV stabilized netting. Blanket shall weigh not less than 0.9 pounds per square yard. North American Green P300 or approved equal.
- C. Staples: No. 11 (or heavier) plain iron wire, made 6 inches in length.
- D. Mulch: Cured straw free from primary noxious weed seeds and rough or woody materials.

E. Erosion Control Seed:

<u>TYPE</u>	<u>% BY WEIGHT</u>	<u>% PURITY</u>	<u>% GERMINATION</u>
Domestic Rye Grass	70	69.75	90
Perennial Rye Grass	30	28.00	85

F. Silt Fence:

1. Support Fence: 30 inch high livestock fence, or high strength plastic mesh.
2. Post: Rolled steel manufactured line post or 2 inch diameter hardwood post, 4.5 feet in length.
3. Fabric: Pervious sheet of synthetic polymer meeting the following minimum requirements.
 - Weight 2.5 oz/sy
 - Width 36 inch
 - Thickness 12 mils
 - Equiv. Opening Size 20-50 sieve
 - Tear Strength 50 lb.
 - Ultraviolet stability 80%
 - a. Mirafi 100X; Terra Tex-SC, or approved equal.
4. Pre-Manufactured Silt Fencing Systems: Separate support fence may be eliminated if fabric is manufactured with reinforcement, including top cord.
 - a. Amoco Propex; AEF Silt Fence-III; or approved equal.

G. Erosion Control Soil/Bark Mix: Shall consist of a mix of recycled composted bark, flume grit, and fragmented wood generated from water-flume log handling systems. The mix shall conform to the following:

1. pH - 5.0 to 6.0.
2. Screen size - 6 inch minus.
3. No less than 25 percent organic material.
4. No stones larger than 2 inches in diameter.
5. Approved by Maine Department of Environmental Protection for use in wetlands and near waterways.

H. Filter Berm: A windrow of erosion control soil/bark mix 2 ft. high by 3 ft. wide.

1. Hay Bales: Bales shall be at least 14" x 18" x 30" in size, staked twice per bale. Stakes shall be 1" x 1" x 36" wooden. Place bales with twine on sides of bale, not top and bottom.

J. Water, calcium chloride, or crushed stone for prevention of airborne dust.

PART 3 - EXECUTION

3.01 EROSION CONTROL BARRIER

- A. Before earthwork is started, a silt fence, filter berm, or stone sediment dam shall be installed along the down-slope side of the construction site, as necessary, to prevent soil sediment migration away from the site. Install silt fence or filter berm along the down-slope side of all top-soil and subsoil stockpiles.
- B. Barrier shall not be removed until finish grading, final seeding, and mulching has been completed and the established grass is approved by the Architect. Maintain barrier in good condition until removed.
- C. Remove silt deposits from the site, place in an area of low erosion potential, seed with erosion control mix, and mulch.

- D. Silt Fence: Set fence post 8 feet O.C. to a depth of 2 feet. Attach support fence to post with fencing staples or appropriate wire ties. Overlap joints in support fence 12 inches. Apply fabric to full height of support fence and secure to prevent sagging, blow off, and loss. A 12-inch overlap of fabric for vertical piecing shall be maintained, folded to a 3 inch width and securely attached to supports. No horizontal joints will be allowed. The bottom of the fabric shall be trenched into the existing ground a minimum of 6 inches. In addition, hay bales or ditch checks shall be installed along the silt fence to create sedimentation pools in low areas where run-off concentrates.
- E. Filter Berm: Place uncompacted erosion control mix in a windrow at locations shown on the plan or as directed by the Architect. At a minimum the berm shall be 3 feet wide at the base and 2 feet high at the center of all points along its length. Berm material, where the berm is still required, which has decomposed, clogged with sediment, eroded, or becomes ineffective, shall be replaced. The berm shall be removed from the site when no longer required, as determined by the Architect.

3.02 TEMPORARY SEEDING AND MULCHING

- A. Topsoil stripped and stockpiled on site shall be immediately seeded with erosion control seed mix and mulched with hay.
- B. Exposed earthwork areas, which will not be worked on for one week, shall be mulched with straw. Unfinished areas which are not to be worked on for one month, or will be wintered, shall be seeded with erosion control mix at a rate of 3 pounds of seed per 1000 sq. ft. and mulched with straw. Apply straw mulch at the rate of 75 pounds per 1000 sq.ft. Anchor mulch to prevent wind blown movement.
- C. In sensitive areas(within 25 ft. of stream or wetland edge) temporary mulch must be applied within 7 days of initial disturbance and prior to any storm event.
- D. No fill shall be placed on hay mulch. Dispose of used hay mulch off site.

3.03 FALL AND WINTER STABILIZATION(September 15 or Later)

- A. Stabilize exposed soils throughout the project site with permanent seed and mulch by September 15, with the exception of areas undergoing active earthmoving operations. These construction areas are primarily in the immediate vicinity of the building. For proposed grass areas not stabilized by permanent seed and mulch by this date, provide the following stabilization measures at no additional cost to the Owner. Select the appropriate methods from the options listed and obtain approval from the Architect prior to installation.
 1. Stabilize the soil with temporary vegetation, except for ditches, by October 1. Place winter rye seed at the rate of 3 pounds per 1000 sq.ft. and lightly mulch with hay or straw at 75 pounds per 1000 sq.ft. Place erosion control mesh over mulch and anchor.
 2. For slopes flatter than 3H:1V, place sod over the exposed soil by October 1. Roll the sod, anchor it with wire pins, and water it to promote growth.
 3. For grassed areas flatter than 10H:1V, stabilize the disturbed soil by November 1 with temporary winter mulching by applying hay or straw at a rate of at least 150 pounds per 1000 sq.ft., such that no soil is visible through the mulch. Anchor mulch with erosion control mesh.
 4. For slopes steeper than 10H:1V and flatter than 2H:1V, place a 6" layer of erosion control soil/bark mix on the disturbed soil by November 1. Remove snow accumulated on the slope prior to installation. If groundwater seeps are present, place stone rip rap to thickness shown on drawing details over non-woven geotextile.
 5. For drainage ditches or channels, place a sod lining by October 1 or place a rip rap lining by November 1. Sod shall be rolled, fastened with wire pins, anchored with erosion control mesh, and watered. Rip rap shall be placed at the thickness shown on the drawing details over a layer of non-woven geotextile.

- B. If the catch of permanent or temporary grass is less than 3" tall or covers less than 75% of the disturbed soil by November 1, apply additional hay mulch at a rate of 150 pounds per 1000 sq.ft.. Anchor mulch with erosion control mesh.
- C. If the catch of permanent or temporary grass is less than 3" tall or covers less than 75% of the disturbed soil on slopes steeper than 10H:1V and flatter than 2H:1V by November 1, place a 6" layer of erosion control soil/bark mix or a rip rap layer, as described above.

3.04 DRAINAGE DITCHES AND EMBANKMENTS

- A. Drainage ditches shall be provided with filter berm silt dams or rock check dams spaced no greater than 100 feet apart.
 - 1. Temporary ditch dams shall be constructed where indicated, using composted bark soil mix or rocks in the configurations shown. Additional temporary ditch dams shall be installed from time to time during the construction where necessary to prevent soil particle migration from the work area. Where necessary due to terrain configuration, earth berms shall be constructed at one or both ends of the ditch check so as to contain runoff. The tops of earth berms shall be higher than the tops of the dams so that runoff will occur only over the dams. Sand bags may be used instead of earth berms at the Contractor's option but shall be faced with earth placed against the upstream face.
- B. Grassed drainage ditches and swales shall be lined with a continuous mat of erosion control mesh for full bottom width and side slopes to 12" above bottom, to stabilize the loam, seed, and mulch.
- C. Where erosive velocities in ditches or embankments are anticipated or experienced, and soil cannot be stabilized with mulch and mesh alone, substitute erosion control soil/bark mix in place of loam. For this use, screen the erosion control soil/bark mix to remove wood, bark, and stones one-inch in size and greater. If erosion control soil/bark mix is used in ditches, and erosive velocities are excessive, provide a 12" thick stone rip rap lining along ditch bottom and up side slopes to one foot above the bottom elevation. Place non-woven geotextile beneath stone.
- D. Stabilize pond embankments(interior and exterior), slopes steeper than 3 horizontal to one vertical, and drainage ditches by September 15. Stabilization shall consist of permanent seeding and mulch. If this date cannot be met, provide alternative permanent or temporary stabilization described as Fall and Winter Stabilization.
- E. Install erosion control mesh over mulch on slopes steeper than 6 horizontal to one vertical (16%) and in conformance to DOT Standard Specifications, latest Edition, Section 9.48, paragraphs 613.03 through 613.06. Anchor mesh as recommended by manufacturer.
- F. Permanently rip-rap inlets and outlets of culverts and pipe outfalls as specified in Section 02200, Earthwork, and as shown on the Drawings.
- G. Install permanent erosion control blanket around culvert inlets and outlets as shown on the Drawings, and according to manufacturer's recommendations.
 - 1. Prepare soil with loam, fertilizer, and seed as specified in section 02930 prior to installing erosion control blanket.
 - 2. Install permanent erosion control blanket 5 feet minimum in all directions around culvert inlets.
 - 3. Install permanent erosion control blanket 5 feet minimum in all directions around culvert outlets, and a 6 feet width centered along the outlet channel for 10 feet.
 - 4. Install staples as shown on the erosion control blanket detail on the Drawings, and throughout the blanket in an 18 by 18 inch grid.

3.05 PARKING AND DRIVES

- A. Place temporary stabilized construction exits where vehicles leave the site and enter existing paved roads; consisting of a 6" layer of 1-1/2" to 3" crushed stone. Tracking and spilling of earth and/or debris on public streets shall be avoided to the maximum extent possible. Clean up and remove such spillage.
- B. As the crushed stone stabilized construction exits continue to scrub the soil from the trucks, the stone layer will tend to fill with sediments. When this occurs remove the stone and sediment and replaced it with a clean layer of stone.
- C. As soon as possible after roads and parking areas are cleared, grubbed and graded to the required subgrade, the gravel base shall be placed.

3.06 DUST CONTROL

- A. Use traffic control to restrict traffic to predetermined routes. Maintain as much natural vegetation as is practicable. Use phasing of construction to reduce the area of land disturbed at any one time. The use of temporary mulching, permanent mulching, temporary vegetative cover, permanent vegetative cover, or sodding will reduce the need for dust control. Use mechanical sweepers on paved surfaces where necessary to prevent dust buildup. Stationary sources of dust, i.e., rock crushers, should utilize fine water sprays to control dust.
- B. The exposed soil surface should be moistened periodically with adequate water to control dust.
- C. Calcium chloride shall be either loose dry granules or flakes fine enough to feed through a spreader at a rate that will keep surface moist but not cause pollution or plant damage. Liquid calcium chloride can also be used. To reduce potential for environmental degradation, use only when other methods are not practical.
- D. Cover surface with crushed stone or coarse gravel. In areas adjacent to waterways, use chemically stable aggregate.
- E. When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control.

3.07 CONSTRUCTION DE-WATERING

- A. Water from construction dewatering operations shall be cleaned of sediment before reaching wetlands, water bodies, streams, or site boundaries. Utilize temporary sediment basins, erosion control soil filter berms, silt fencing, block and gravel catch basin inlet protection, or other approved Best Management Practices(BMP's).
- B. In sensitive areas, near streams or ponds, discharge the water from the de-watering operation into a temporary sediment basin created by a surrounding filter berm of uncompacted erosion control soil mix. Locate the temporary sediment basin at least 100' from the nearest water body, such that filtered water will flow through undisturbed vegetated soil areas prior to reaching the water body or property line.

3.08 ADDITIONAL MEASURES

- A. Areas outside the Contract work limits shall be protected from lubricants, fuel, sediment and other pollutants.
- B. Catchbasin inlets in gravel or paved areas shall be surrounded by a sediment barrier of hollow concrete blocks 12" to 24" high covered with wire mesh of 1/4" opening. Pile well graded crushed stone of 1/2" to 2" stone size around the mesh to the top of the blocks.

- C. Catchbasin inlets in grassed areas shall be protected by hay bales or block and gravel sediment filter until permanent soil stabilization has been achieved.
- D. Inspect erosion and sedimentation control weekly and after every storm and maintain in good working condition for project duration.

3.09 REMOVAL AND DISPOSAL

- A. When permanent soil stabilization has been achieved, temporary materials and devices that are not readily degradable shall be removed and disposed of off site. Re-usable materials are and shall remain the property of the Contractor.
- B. Remove silt and sediment from catchbasins, drainage ways, silt ponds and other silted areas and dispose off site. Place the silt in an area of low erosion potential, and seed and mulch it for stability.

3.10 NPDES PERMIT

- A. Comply with the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) Permit requirements for construction sites. The NPDES is a Federal EPA Permit for Construction Sites disturbing 5-acres or more. Both the Owner and the contractor must file separate NOI forms to EPA 2-days prior to construction. Basically, only the NOI form gets mailed to EPA, but all the background material, such as the Storm Water Pollution Prevention Plan must be done and kept on the site. A suggested procedure is outlined on the attached "Information Sheet for Contractor".

END OF SECTION

INFORMATION SHEET for CONTRACTOR

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM(NPDES)

The NPDES is a Federal EPA Permit for Construction Sites disturbing 5-acres or more. The permit is valid only through the duration of construction, until the site is fully stabilized. The following outline is a suggested procedure, but is certainly not a complete discussion of the EPA program or requirements. It would be advisable to verify permit procedures and forms by calling EPA's Boston office(Thelma Murphy at 617-565-3569). Up-to-date information is available through the Internet at "<http://www.epa.gov/owm/cgp.htm>"; and there is a Notice of Intent Processing Center at 703-931-3230.

Suggested Procedure:

1. Prepare the Storm Water Pollution Prevention Plan(SWPPP):

EPA has available a document called "Summary Guidance", which outlines the SWPPP, gives checklists and typical inspection forms, and has a completed example. The Architect will be preparing a "Draft" SWPPP for the Owner's use in filing their NPDES permit. It will refer to the completed DEP Site Location application narratives and drawings, and the construction plans and specifications. If you want to use this as your SWPPP, a copy can be made available.

2. Fill out the Official EPA "Notice of Intent" (NOI) form:

This enclosed one-page form must be completed and signed by an officer of your corporation. Read the instructions on the second page.

3. Verify eligibility related to the EPA Endangered Species requirement:

There must not be any threatened or endangered species or critical habitat disturbed by this project. The letter from Maine Inland Fisheries and Wildlife, attached in Section 20 of the DEP application book, should be sufficient. It remains in the file and does not get sent to EPA.

4. Mail ONLY the NOI form to the Washington, DC address in the instructions:

The SWPPP and background material does NOT go to EPA. Mail the NOI at least two days before start of work on site. Make sure the project start date on the NOI agrees.

5. Put the SWPPP and your copy of the NOI into the DEP Permit binder(provided by Architect), and keep this document in the job trailer or on site, where it is readily available for review. This binder will then include both the DEP and EPA documents.

6. Post a copy of the NOI, or a response document from EPA, in a conspicuous location at the job site.

7. Designate a Site Inspector to be responsible for monitoring environmental issues and filling in weekly inspection forms. Make copies of the Inspection and Maintenance Report Forms, and fill one out every 7 days and after every rainfall of at least 0.5 inch. Keep these forms as a historical log of the construction activity, which may be reviewed by EPA, DEP, or the Town.

8. After the project is complete and the site is fully stabilized, fill out a Notice of Termination(NOT), and mail to EPA. After construction, the permit is no longer in force.

SECTION 02500

PAVING AND SURFACING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide materials and labor for drive, parking and walkway; paving, pavement markings, and curbing.

1.02 STANDARD REFERENCE

- A. Reference is made to the 1995 revision of "Standard Specifications for Highways and Bridges" of the State of Maine Department of Transportation (MDOT), or latest revision.

1.03 SUBMITTALS

- A. Submit pavement mix design of each grade.
- B. Submit field density test results of one test for each 100 tons of bituminous paving.
- C. Submit curbing manufacturer's literature.

PART 2 - PRODUCTS

2.01 BITUMINOUS CONCRETE MATERIALS

- A. Hot bituminous pavement, MDOT, Section 403. Composition, preparation and transportation of bituminous concrete, including plant and equipment shall meet applicable portions of MDOT, Section 401, PLANT MIX PAVEMENTS - GENERAL.
- B. Binder course aggregate conforming to MDOT, Section 703.09, Grade B(or Superpave 19 mm). Surface course aggregate for roads, parking, and walks conforming to MDOT, Section 703.09, Grade D(or Superpave 9.5 mm).

2.02 TACK COAT

- A. A low viscosity liquid bituminous coating sprayed on an existing course prior to placing a new bituminous concrete course. Emulsified asphalt conforming to MDOT 702.04, Grade RS-1 or HFMS-1.

2.03 CURBING

- A. Vertical Granite Curb: MDOT Type 1, 5" x 18" with sawn top, split face and saw-cut jointed ends on each section. Minimum length of 2 feet. Use curved sections on curb radius of 40 ft. or less. Where paver bricks meet granite curb, provide a smooth joint no more than 1/4 inch wide.
- B. Bituminous Curb: Extruded 6" high x 8" wide, as specified in MDOT Section 609.02.

2.04 PAVEMENT MARKINGS

- A. Latex paint designated for traffic use; meeting the requirements of AASHTO M248. Cosmicoat Traffic Paint, Sherwin-Williams Waterborne Traffic Paint, or approved equal. Color white.

PART 3 - EXECUTION

3.01 CONSTRUCTION OF PAVEMENT

- A. Hot bituminous concrete pavement shall be constructed over gravel drive and walks in accordance with CONSTRUCTION REQUIREMENTS of MDOT, Section 401, except as modified herein. Exclude paragraphs 401.21 METHOD OF MEASUREMENT and 401.22 BASIS OF PAYMENT.
- B. Do not place pavement over frozen gravel.
- C. Replace existing pavement disturbed by the work of this Contract with new bituminous pavement of the thicknesses shown on the Drawings or match existing, whichever is greater.
- D. Where new and existing pavement join, saw-cut square and form a smooth transition of grades.
- E. Treat exposed existing pavement with sprayed bituminous tack coat prior to placing new adjacent or overlaying bituminous pavement. Pavement which has been in place longer than 30 days shall be considered existing. Conform to MDOT Section 409, excluding paragraphs 409.08 and 409.09.
- F. Prior to placing surface course or tack coat, thoroughly clean the paved surface of soil, loose material, and other objectionable material, to the approval of the Architect.
- G. Construct walks no steeper than 5%(1 vert. to 20 hor.) longitudinal grade, and no steeper than 2%(1 vert. to 50 hor.) cross slope.

3.02 PAVEMENT MARKINGS

- A. Apply lining paint in strict accordance with manufacturer's printed instructions after pavement has cured sufficiently to prevent bleeding or lifting (at least three weeks). Line width, 4" unless otherwise noted.
- B. Apply handicap symbols in accordance with ANSI A117.1, Section 4.28.
- C. Perform work in accordance with the U. S. Department of Transportation Manual of Uniform Traffic Control Devices.
- D. Finished lines and markings shall be straight, uniform, and well-defined without excessive overspray. Wet thickness of paint at least 15 mils. Symbols shall be painted using appropriate templates.

3.03 CURBING INSTALLATION

- A. Granite or concrete curb shall be adjusted to grade and alignment on a well-compacted gravel foundation so that the front line conforms to the line and grade required. The foundation shall be prepared in advance of setting the curb by grading the gravel to the proper elevation. The sections shall be fitted together to form an open joint no greater than 1/4 of an inch. Fill the back of vertical curb joints with concrete mortar for a depth of one inch and a height of 12 inches to prevent soil washout. Behind both vertical and sloped granite curb joints place a 12" wide layer of non-woven geotextile.
- B. Provide tapered end sections at handicap ramps, curb openings and ends of curbing.
- C. Bituminous curb shall be placed on a tack coat on the binder course of pavement and locked in place by the surface course. Conform to MDOT Section 609.04.

END OF SECTION

SECTION 02660

WATER DISTRIBUTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide labor and materials to complete the water distribution installations outside of building lines.
 - 1. Water services.
 - 2. Valves and fittings.

1.02 RELATED WORK SPECIFIED IN OTHER DIVISIONS

- A. Section 03300: Cast-In-Place Concrete.

1.03 SUBMITTALS

- A. Submit manufacturer's product literature and Shop Drawings for approval on all materials in accordance with Section 01300.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Materials and installation shall meet the requirements of the Portland Water District. Coordinate work within City right-of-way with Portland Water District, Public Works, and MDOT.

2.02 WATER PIPING

- A. Domestic service pipe of 2" diameter or smaller within City Right-of-Way shall be Type "K" annealed copper tubing with compression type fittings.
- B. Domestic service pipe within project property shall be high-density polyethylene PE 3408 tubing conforming to ASTM D2837, SDR-9, rated for water service at 200 psi sustained pressure. For diameters 2" or smaller, use compression type fittings with pipe stiffeners.

2.03 VALVES AND FITTINGS

- A. Curb stop valve shall be heavy duty brass body with Teflon-coated cast brass ball. Mueller, Ford, or equal.
- B. Service box shall be furnished and installed for buried curb stop valve, and shall be heavy duty cast iron, slide type, adjustable box, together with cast iron cover.

PART 3 - EXECUTION

3.01 WATERLINE INSTALLATION

- A. Place pipe on a stable excavated trench bottom with coupling holes such that the full barrel length of the pipe bears upon the trench bottom; blocking will not be permitted.
- B. The first layer of suitable backfill material shall be brought half-way up the pipe and compacted to 95% maximum density. The next layer shall be brought to 12" above the pipe and compacted to 95% maximum

density; and then the remainder of the trench shall be backfilled and compacted as specified. No length of pipe shall be laid until the previous length has had sufficient material tamped about it to firmly secure it in place so as to prevent any movement or disturbance.

- C. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when trench conditions or weather are unsuitable for such work, except by permission of the Architect.
- D. Plugs or caps shall be furnished and installed where shown and as necessary to adequately test and disinfect the pipeline installed under this contract, and shall be of the same design classification as the pipe to which they are attached. The Contractor shall provide a temporary cap, designed for the purpose to be installed in the pipe opening at the end of each day's work and at any time the work is suspended.
- E. Locate and confirm sizes and materials of existing mains, excavate, furnish and install tapping sleeves and valves, make the taps, and backfill the excavation. Provide all materials, including mechanical joint accessories, valve boxes, and other items necessary to make all joints to existing water mains watertight. No valves on existing mains shall be operated by the Contractor without permission of the Water District and Owner of the existing main. The location of the points of connection and the locations of the existing mains are approximate only, and the Contractor shall provide labor, equipment, and material for connections without extra charge. Pay the fees and expenses of the Water District for their assistance as they deem necessary.
- F. Surround water pipe with 6" concrete encasement, reinforced with #6 welded wire fabric, where sanitary sewerline crosses; with a 10 ft. encasement length each side of crossing pipe. Omit encasement if waterline is above sewer by 18-inch clearance.

3.02 INSTALLATION OF VALVES AND FITTINGS

- A. Locate the center of valves 3 feet from the center of tees and crosses. Leave valves closed after installation, and assure ease of operation.
- B. Provide Concrete Thrust Blocking at the Following Pipe Locations:
 - 1. Changes in direction as at tees, bends and crosses.
 - 2. Changes in sizes, as at reducers.
 - 3. Dead ends.
- C. They shall be constructed by placing concrete between the fittings and the undisturbed wall of the trench. A stiff mixture, with no more than a 3-inch slump, shall be used so that the concrete may be easily shaped into the desired form, a wedge with the wide end against the solid wall. Place 4-mil polyethylene sheeting between concrete and fitting to prevent bonding.
- D. Minimum thrust block area against the undisturbed trench wall shall be as shown on the drawing details.
- E. Where a fitting is used to make a vertical bend, anchor the fitting with steel rods to a thrust block braced against undisturbed soil. The thrust block should have enough resistance to withstand upward and outward thrusts at the fitting.

3.03 WATERLINE PRESSURE TEST

- A. Coordinate pressure test and flushing of lines with the Water District. Flush out new lines after the pipe has been laid and back-filled until the water runs clear. Following the initial cleaning, test lines in the presence of the Architect and a representative of the Water District. Tests shall be conducted at a time and in a manner to minimize as much as possible any interference with the operation of the existing water system. The Water District will supply water necessary for testing and placing the lines in service from an existing hydrant. The Contractor shall supply labor and equipment necessary to carry out the tests and chlorination.

- B. The pressure test shall be conducted using a hydrostatic test pressure of not less than 1.5 times the working pressure at the point of testing.
- C. Each valved section of pipe shall be slowly filled with water and air expelled from the pipe. If permanent air vents are not located at high points, Contractor shall install corporation stops at such high points to bleed off air as the line is filled with water.
- D. The specified pressure shall be applied to each section of pipe by means of a pump. The test shall remain stationary at the specified pressure for at least two (2) hours. A pressure test will be deemed satisfactory if the pressure drop is less than 15 pounds over the test period. Cracked or defective pipe, valves or fittings discovered as a result of the test shall be removed and replaced by the Contractor at no additional cost to the Owner, and the test repeated until the results obtained are satisfactory to the Water District.

3.04 WATERLINE LEAKAGE TEST

- A. A leakage test shall be conducted after the pressure test has been satisfactorily completed, or may be conducted concurrently with the pressure test.
- B. The Contractor shall furnish labor and equipment and perform the leakage tests in the presence of the Architect and a Water District Representative.
- C. The section of line to be tested shall be filled with water and the entrained air within the line removed and pumped to the test pressure as stated above. The line shall be maintained under this pressure (+5 psi) for a continuous period of two hours by pumping water into the lines at frequent intervals.
- D. The volume of water so added shall be measured and considered to represent the leakage from the line under test during the interval. Contractor shall provide a 5/8-inch water meter around a closed valve to measure the amount of water pumped into the line.
- E. The leakage in gallons per hour under the conditions of test shall not exceed the length in feet times the nominal diameter in inches times the square root of pressure in psi divided by 133,200, as represented in the following chart:

ALLOWABLE LEAKAGE PER 1000 FT. (305 M) OF PIPELINE - RPHT - GAL./HOUR NOMINAL PIPE DIAMETER - IN.								
Avg. Test Press. psi (bar)	3	4	6	8	10	12	14	16
450 (31)	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55
400 (28)	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40
350 (24)	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25
300 (21)	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08
275 (19)	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99
250 (17)	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90
225 (16)	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80
200 (14)	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70
175 (12)	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59
150 (10)	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47
125 (9)	0.25	0.35	0.50	0.67	0.84	1.01	1.18	1.34
100 (7)	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20

Avg. Test Press. psi (bar)	18	20	24	30	34	42	48	54
450 (31)	2.87	3.18	3.82	4.78	5.73	6.69	7.64	8.60
400 (28)	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11
350 (24)	2.53	2.81	3.37	4.21	5.06	5.90	6.74	7.58
300 (21)	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02
275 (19)	2.24	2.49	2.99	3.73	4.48	5.23	5.98	6.72
250 (17)	2.14	2.37	2.85	3.46	4.27	4.99	5.70	6.41
225 (16)	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.03
200 (14)	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73
175 (12)	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36
150 (10)	1.66	1.84	2.21	2.76	3.31	3.46	4.41	4.97
125 (9)	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53
100 (7)	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05

1. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal./hr./inch of nominal valve size shall be allowed.
2. When hydrants are in the test section, the test shall be made against the closed hydrant.

F. In the event the leakage exceeds the specified amount, the joints in the line shall be carefully inspected for leaks and repaired where necessary. Pipes, fittings, or special castings found to be defective shall be removed and replaced by new pieces by the Contractor. After this work has been done, repeat the test.

3.05 WATERLINE FLUSHING AND CHLORINATION

- A. Coordinate flushing and chlorination with the Water District. Flush out new lines until the water runs clear. This shall be done before disinfection.
- B. Disinfect the pipe lines with chlorine applied either as a gas from cylinders or by introduction of a hypochlorite solution. Calcium hypochlorite in commercial grades contains about 65% to 70% of free chlorine. Should the hypochlorite method be used, then the chlorite powder shall be made into a paste, then thinned with water to about 7.50 gallons to each pound of powder, allowance made for the solids from the powder allowed to settle out and then the solution applied to the main through a rubber hose by gravity, siphonage or a suitable injection pump.
- C. The point of application of the chlorinating agent shall be at the beginning of the pipe line extensions or at any valved section thereof, either point being through a corporation cock inserted in the top of the newly laid pipe. If a hypochlorite solution is used, a spring-loaded injection valves is required.
- D. The water line system shall then be slowly filled with water. The chlorine residual in the water main shall be at least 50 ppm after filling, and after 24 hours shall be at least 20 ppm. Care shall be taken such that no chlorine-treated water may flow back into the line supplying the required water for filling the system.
- E. After the treated water has been allowed to stand in the system at least 24 hours, the lines shall be thoroughly flushed until all the chlorine-dosed water is remove.

- F. Bacteriological water samples shall be collected from the end-most outlet of the treated pipe line on each of two consecutive days. If at the end of this period, the samples show safe results, the new line may be placed in service. If the results are unsafe, the chlorine treatment shall be repeated until the samples show safe results. Bacteriological samples shall be submitted to the State Health Department for testing.
- G. Following chlorination, all treated water shall be thoroughly flushed from all construction, and upon testing be proven free from impurities and chlorine as required by the State Health Department.

END OF SECTION

SECTION 02700

SEWERAGE AND STORM DRAINAGE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide labor and materials to complete the sanitary and storm drainage as shown on the Drawings and/or herein specified.
 - 1. Sewer lines.
 - 2. Storm drain lines.
 - 3. Underdrains, including foundation drains.
 - 4. Catchbasins.
 - 5. Trench insulation.
 - 6. Geotextile drainage fabric.
 - 7. Repair of existing utilities damaged by the work.
 - 8. Pre-manufactured concrete stormwater treatment tank.
 - 9. Cast-in-place concrete encasement for utility lines and pipes.
- B. Terminate site utility pipes and conduits at the building foundation wall for connection to building utilities.

1.02 RELATED SECTIONS IN OTHER DIVISIONS

- A. Section 03300: Cast-In-Place Concrete.

1.03 SUBMITTALS

- A. Submit manufacturer's product literature and Shop Drawings for approval on materials in accordance with Section 01300.
- B. Certified copies of test results.
- C. As-built records of pipe location, depth, services, and repairs.

PART 2 - PRODUCTS

2.01 SEWER PIPE

- A. Polyvinylchloride (PVC), Type PS-46, conforming to ASTM F789; or Type PSM conforming to ASTM D3034, maximum ratio of outside diameter to wall thickness of 35 (SDR-35). Watertight push-on couplings with flexible O-ring gasket, conforming to ASTM D3212.

2.02 STORM DRAINS

- A. Unless Otherwise Noted Use Any of the Following Pipe Materials:
 - 1. Polyvinylchloride (PVC), Type PS-46, conforming to ASTM F789; or Type PSM conforming to ASTM D3034, maximum ratio of outside diameter to wall thickness of 35 (SDR-35). Watertight push-on couplings with flexible O-ring gasket.
 - 2. High density polyethylene pipe (HDPE), conforming to ASTM D3350 and AASHTO M294 with corrugated exterior and smooth interior. Couplings and fittings of same material conform to AASHTO M294.

- B. Provide precast reinforced concrete flared pipe ends for drainage piping inlets and outlets, with appropriate flexible couplings to connect the PVC or HDPE pipe, such that no plastic pipe is exposed at the ground surface.

2.03 UNDERDRAINS

- A. Use One of the Following for Underdrains:
 1. Polyvinylchloride (PVC), Type PS-46 conforming to ASTM F-789 or PSM (SDR 35) conforming to ASTM D-3034 perforated with two rows of 1/2-inch diameter holes. Gasketed push-on joints.
 2. Corrugated polyethylene drainage pipe, heavy-duty grade, perforated, conforming to AASHTO M252 and ASTM F 405. Pipe must be marked as "Heavy-Duty" conforming to ASTM F405, or pipe stiffness of 30 psi at 5% deflection, maximum of 5% elongation.
- B. Provide cleanout risers to finish grade outside the building with threaded covers. Grease threads on cover. Provide cleanout plug inside a cast iron or aluminum handhole and cover, set flush to walkway or drive pavement, where cleanout is in a hard surface area.

2.04 CATCHBASINS

- A. Precast reinforced concrete 4000 psi base and barrel sections of dimensions shown on the Drawings, haunched concentric cone sections conforming to ASTM C478, constructed to support HS-20 wheel loading.
- B. Where required by shallow installations or directed by the Architect, provide a flat slab top constructed to support HS-20 wheel loading.
- C. Joints sealed watertight with flexible strips of butyl rubber joint sealant. Pipe openings precast into units, using cast-in EPDM flexible sleeves meeting ASTM C-923 with stainless steel coupling bands.
- D. Provide a 24-inch deep sump in catchbasins, unless otherwise noted.

2.05 MANHOLE FRAMES AND COVERS

- A. Cast iron conforming to ASTM A48, heavy-duty of 300 pounds minimum weight to support H-20 wheel loading, with machined bearing surfaces.
- B. Frames shall have a minimum clear opening of 22-1/2" diameter. Covers lettered for proper service such as "STORM".

2.06 CATCH BASIN FRAMES AND GRATES

- A. Cast iron conforming to ASTM A48, heavy-duty of 450 pounds minimum weight to support H-20 wheel loading, with machined bearing surfaces. Square frame and grate of 24-inch dimensions with bicycle-safe grate grid of 225 square inch minimum flow area.

2.07 GEOTEXTILE DRAINAGE FABRIC

- A. Polypropylene or Polyester Non-woven, Needle-punched Drainage Fabric with the Following Minimum Properties:

Weight	4.5 oz/sy	Water Flow Rate	280 gpm/sf
Thickness	60 mils	Coef of Permeability	0.2 cm/sec
Tear Strength	50 lbs	Equiv. Opening Size	70-100 sieve

- B. Mirafi 140N, Terra Tex - SD, Trevira 1115, AEF 480, or approved equal.

2.08 TRENCH INSULATION

- A. Extruded polystyrene with a "K" factor of 0.18, with 2.2 lb./cu. ft. density, and 30 psi compressive strength, manufactured by Dow Chemical, or approved equal.

2.09 PRECAST REINFORCED CONCRETE STORMWATER TREATMENT TANK

- A. Concrete for precast stormwater treatment systems shall conform to ASTM C 857 and C 858 and meet the following additional requirements:
 1. The wall thickness shall not be less than 6 inches or as shown on the dimensional drawings. In all cases the wall thickness shall be no less than the minimum thickness necessary to sustain HS20-44 loading requirements as determined by a Licensed Professional Engineer.
 2. Sections shall have tongue and groove or ship-lap joints with a butyl mastic sealant conforming to ASTM C 990.
 3. Cement shall be Type III Portland cement conforming to ASTM C 150.
 4. Pipe openings shall be sized to accept pipes of the specified size(s) and material(s), and shall be sealed by the Contractor with a hydraulic cement conforming to ASTM C 595M
 5. Internal metal components shall be aluminum alloy 5052-H32 in accordance with ASTM B 209.
 6. Provide the manhole frames to grade using brick and mortar precast riser rings.
 7. All sections shall be cured by an approved method. Sections shall not be shipped until the concrete has attained a compressive strength of 4,000 psi or until 5 days after fabrication and/or repair, whichever is the longer.
 8. A bitumen sealant in conformance with ASTM C 990 shall be utilized in affixing the aluminum swirl chamber to the concrete vault.
- B. Tank shall be Vortech model 4000, manufactured by Vortech, Inc., Portland, ME.

PART 3 - EXECUTION

3.01 EXCAVATION AND BACKFILL

- A. Conforming to the appropriate portions of Section 02200, Earthwork.

3.02 SEWER AND STORM PIPING

- A. Lay pipe on stable bedding beginning at the downstream end and proceeding upstream with the bell end of the pipe upstream. Provide adequate trench drainage to prevent pipe floatation and insure proper bedding compaction.
- B. Where continuous bedding material is used and pipe slope exceeds 3%, construct trench dams along the trench to hinder the flow of ground water through the bedding material. Construct trench dams of relatively impervious clayey or silty material excavated from the trench, extending 1 foot above the pipe embedment zone, and spaced within 25 feet upstream of each manhole, and whenever the trench grade rises 10 feet.
- C. Coordinate work on municipal utility lines and within street right-of-way with municipal sewer department, MDOT, and public works department.

3.03 UNDERDRAINS

- A. Set drains in crushed stone bedding surrounding pipe, with perforations on the bottom half of the pipe. Slope pipe uniformly to drain. Fully wrap stone bedding with Geotextile fabric. Compact to 95% maximum density around pipe.

3.04 CATCHBASINS

- A. Place precast base section level on 8-inch layer of compacted granular bedding material to proper invert elevation. Construct precast sections plumb and with watertight joints and pipe connections.
- B. Fill lifting holes and voids with cement mortar.
- C. Adjust catchbasin frame to proper grade to receive drainage by use of brick masonry. Use a minimum of 4" of risers and a maximum of 12". Encase frame in full bed of cement mortar.

3.05 STORMWATER TREATMENT TANK

- A. Install tank and related equipment in strict conformance to manufacturer's recommendations.

END OF SECTION

SECTION 02800

SITE IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide Labor, Materials, and Equipment for Site Improvements Shown on the Drawings or Specified Herein, Including:
1. Pressure-treated timber.
 2. Chain-link fence and gates.
 3. Baseball and Softball backstops.
 4. Exterior signs.
 5. Roadway gate.
 6. Precast concrete unit retaining wall.

1.02 SUBMITTALS

- A. Submit manufacturer's product literature and Shop Drawings for approval on materials in accordance with Section 01300.
- B. For precast concrete unit retaining walls, also submit profile and section drawings. Submit design drawings (including plans, profiles, sections, and details), and computations stamped by a Registered Professional Engineer.

1.03 DELIVERY, STORAGE AND PROTECTION

- A. Deliver materials to the site in an undamaged condition. Carefully store materials off the ground to provide proper protection against oxidation, and other damage caused by ground contact.

PART 2 - PRODUCTS

2.01 PRESSURE TREATED TIMBER

- A. CCA pressure treated #2 and better, Southern Pine kiln-dried or air-seasoned to an average moisture content of 16% or less and planed on all sides. The amount of CCA preservation injected into timber shall be .40 pounds per cubic foot of wood.
- B. Exposed edges shall be chamfered 3/4".
- C. Fasteners shall be hot-dipped galvanized, unless otherwise noted.

2.02 CHAIN-LINK FENCE

- A. Chain-Link Fencing Fabric: Thermally fused polyvinyl chloride coated, galvanized steel, 9-gage core wire size with a zinc coating of at least 2 oz. per square foot. Mesh size shall be two inch. Selvage shall be knuckled at bottom and top. Fence height shall be as shown on the Drawings. Dark green color.
- B. Chain-Link Fencing Gate: Shall be single-swing type. Gate height to match fence. Framing and bracing members shall be round of steel alloy. Steel member finish shall be zinc-coated. Gate fabric shall be as specified herein for chain-link fencing fabric. Coating on framing members, latches, tops, rollers, and accessories shall be zinc-coated steel having weight of zinc-coating not less than 1.2 ounces per square foot. Gate shall have truss rods or intermediate braces. Attach gate fabric to the gate frame

SEC ADDENDUM # 1

by method standard with the manufacturer, except that welding will not be permitted. All components shall be polyvinyl chloride coated to match fabric. Bottom hinges to be ball-and-socket type designed to carry the weight of the gate on the post footing. Upper hinge to be wrap-around adjustable type. All gates to be equipped with a positive-type latching device with provisions for padlocking. All drive gates to be provided with center plunger rod, catch, and semi-automatic outer catches to secure gates in open position.

- C. Posts, Top Rails, Bottom Rails and Braces: Material shall be zinc-coated, Schedule 40, round steel pipe; weight of zinc coating shall be 1.6 ounces per square foot of base metal surface. Provide galvanized post tops shaped to receive top rail. Provide fabric ties of 9 gauge aluminized wire. All components shall be polyvinyl chloride coated to match fabric. Provide bottom rails on all sizes of fence. Provide all components with the following dimensions.

SEE ADDENDUM # 1

USE AND SECTION	OUTSIDE DIAMETER NOMINAL INCHES
End, corner and pull posts (tubular) fabric height 6'-0" and less	2.375
Over 6'-0"	2.875
Gate posts for nominal width of gate, single or one leaf of double gate width 6'-0" or less	2.875
Over 6'-0" to 13'-0"	4.00
Over 13'-0" to 18'-0"	6.625
Over 18'-0"	8.625
Gate frames 6'-0" or less in height - 8'-0" or less in width	1.660
Gate frames over 6'-0" in height - over 8'-0" in width	1.90
Rails and post braces	1.66
INTERMEDIATE POSTS FOR FABRIC HEIGHTS	
6'-0" and less	1.90
Over 6'-0"	2.375

- D. Fence Post Drive Anchors: Steel angle blades of a minimum length of 39 inches, and a steel shoe bolted to the fence post below ground level. Drive two anchors through the shoe at each post at right angles to the fence line.

SEE ADDENDUM # 1

2.03 SPORTSFIELD EQUIPMENT

- A. Baseball Backstop: Heavy-duty, galvanized steel permanent backstop, 40' wide rear panel, 10' wide side panels, 12' height; all panels with full over-top hood for a total height of 19'-6". Model #1235-00, manufactured by Patterson-Williams Athletic Company, Prescott, AZ. No rear planking.
- B. Softball Backstop: Heavy-duty, galvanized steel permanent backstop, 20' wide rear panel, 10' wide side panels, 10' height; all panels with full over-top hood for a total height of 17'-6". Model #1230-00, manufactured by Patterson-Williams Athletic Company, Prescott, AZ. No rear planking.

2.04 EXTERIOR SIGNS

- A. Handicap parking sign conforming to ANSI A117.1, Section 4.28 and U. S. DOT Manual on Uniform Traffic Control Devices. International handicap symbol and words "Handicap Parking" on 12" x 18" sign.
- B. Standard metal traffic control signs conforming to U. S. DOT Manual on Uniform Traffic Control Devices. Code numbers as shown on Drawings.
- C. Standard U-channel steel support post of 8 ft. length, green or black enamel finish, with theft-proof sign fasteners.
- D. Wooden signs on pressure treated wood posts shall be as detailed on the drawings. **SEE ADDENDUM # 1**

2.05 ROADWAY GATE

- A. Double-leaf swinging gate of 1-5/8-inch O.D. hot-dipped galvanized Schedule 80 steel pipe. Posts of same material at 4-inch O.D., set in concrete piers. Dimensions as shown on the drawings; with padlock chain at the center.

2.06 PRECAST CONCRETE UNIT RETAINING WALL

- A. Modular block interlocking units of 3000 psi 28-day compressive strength concrete with maximum moisture absorption rate of 6 percent, conforming to ASTM C90, C140 and C145. Textured exposed straight face units of random pattern natural stone appearance shall provide a weight of 80 lbs. per sq. ft. of wall face and shall interlock with non-corrosive pins. The finished wall shall be battered at approximately 3/4-inch per course. A random mixture of two or three color units. Colors to be selected by Architect.
- B. Wall units shall be "Country Manor" by Keystone of Minneapolis, MN. No substitutions allowed.
- C. Retaining wall shall be reinforced with horizontal layers of high density polyethylene geogrid conforming to ASTM D1248 of the grade recommended by the wall manufacturer. Manufactured by Tensar Corporation, or approved equal.

PART 3 - EXECUTION

3.01 POST INSTALLATION

- A. Install posts for the fence and playfield equipment on previously prepared surfaces to line and grade as indicated. Install in accordance with the manufacturer's written installation instructions except as modified herein.
- B. Excavation: Excavate for concrete-embedded items to dimensions indicated. Clear post holes of loose material. Dispose of waste material as directed.
- C. Post Setting: Set posts plumb. Provide steel drive anchors for line posts to depths of 5 ft. Provide 12" diameter concrete bases for corner and gate posts to depths of 5 ft. Thoroughly compact concrete to be **SEE ADDENDUM # 1** free of voids and finish in a dome. Cure concrete a minimum of 72 hours before any further work is done on posts.

- D. Where solid rock is encountered without an overburden of soil, line posts shall be set a minimum depth of 12 inches, and end, corner, gate and pull posts a minimum of 18 inches into the solid rock. The hole shall have a minimum width of one (1) inch greater than the largest dimension of the post section to be set.
1. After the post is set and plumbed, the hole shall be filled with grout consisting of one part Portland cement and three parts clean, well graded sand. Other grouting materials may be used if approved by the Engineer. The grout shall be thoroughly worked into the hole so as to leave no voids. The grout shall be crowned to carry water from the post.
 2. Where solid rock is covered by an overburden of soil or loose rock, the posts shall be set to the full depth detailed unless the penetration into solid rock reaches the minimum depths specified above, in which case the depth of penetration may be terminated. Concrete footings shall be constructed from the solid rock to the top of the ground. Grouting will be required on the portion of the post in solid rock.

3.02 FENCE CONSTRUCTION

- A. Bracing: Brace gate, corner, end, and pull posts to the nearest post with a horizontal brace used as a compression member and a diagonal truss rod and truss tightener used as a tension member.
- B. Rails: Install rails before installing chain-link fabric. Pass top rail through intermediate post caps. Provide expansion coupling spaced as recommended by the manufacturer.
- C. Fabric: Pull fabric taut and secure fabric to top rail close to both sides of each post and at intervals of not more than 24 inches on centers. Secure fabric to posts using stretcher bars and ties or clips or by integrally weaving to integral fastening loops of end, corner, pull, and gate posts for full length of each post. Install fabric on opposite side of posts from area being secured. Install fence fabric to provide approximately 2-inch deflection at center of span of fabric between two posts, when a force of approximately 30 pounds is applied perpendicular to fabric. Fabric should return to its original position when force is removed.
- D. Gates: Install gates plumb and level, to swing through 180 degrees from closed to open.

3.03 SPORTSFIELD EQUIPMENT

- A. Install equipment and fencing securely on posts per manufacturer's instructions.

3.04 PRECAST CONCRETE RETAINING WALL

- A. Install wall in proper alignment as shown on the Drawings, set on a gravel leveling course compacted to 95% maximum dry density as shown, and in accordance with the manufacturer's recommendations. Install units in a random mixture of two or three varying colored units, as selected by Architect.
- B. Backfill placement shall closely follow erection of each course of wall units. Backfill shall be placed in such a manner as to avoid any damage to the wall materials or misalignment of units. Any wall components which become damaged or disturbed during backfill placement shall be removed and replaced at the contractor's expense. Any backfill material placed within the soil mass which does not meet the requirements of Section 02200 shall be corrected or removed and replaced at the Contractor's expense.
- C. Adhere both the cap stone and the top two full-size stones solidly to the underlying stone using "Keystone Kapseal Adhesive," or approved equal.
- D. Grout exposed slots, grooves, or holes on end units to a solid appearance using color matched mortar.

END OF SECTION

SECTION 02810

IRRIGATION SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This section shall include labor, materials, equipment and services required to complete the irrigation work indicated on the drawings and in the specifications. The complete electrical system, including control wiring for line and low voltage, from the controller to the field sprinklers shall be included.
- B. Electrical power supply to the Maintenance Building, and the power connection to the pump and controllers shall be done by the Division 16 electrician.
- C. The point of connection for the irrigation water system shall be at the 2 inch service pipe located in the Maintenance Building, generally where indicated on the drawings.

1.02 RELATED WORK

- A. Carefully examine all of the Contract Documents for requirements which affect the work of this section.
- B. Cooperate with other contractors on the project site to schedule work in proper sequence.

1.03 QUALITY ASSURANCE

- A. Installer: All work within this section shall be furnished and installed by one of the following irrigation system construction firms:
 - 1. Irrigation Systems of Maine, Yarmouth, ME (207-846-9344).
 - 2. Watermatic Irrigation Co., Scarborough, ME (207-883-4170).
- B. Applicable requirements of accepted Standards and Codes shall apply to the work of this Section:
 - 1. American Society for Testing & Materials (ASTM)
 - 2. National Plumbing Code (NPC)
 - 3. National Electric Code (NEC)
 - 4. National Sanitary Foundation(NSF)
 - 5. American Society of Agricultural Engineers (ASAE)

1.04 PERMITS, CERTIFICATIONS AND INSPECTIONS

- A. Obtain and pay for permits, tests and certifications required for the execution of work under this section.
- B. Furnish copies of Permits, Certifications and Approval Notices to the Owner's Representative.

1.05 TESTS

- A. Observation: The Owner's Representative will be on site at various times to observe the system installation.
- B. Operational Test: After completion of the system, test the operation of entire system and adjust sprinklers to the approval of the Owner's Representative. Demonstrate to the Owner's Representative that all irrigated areas are being adequately covered.

1.06 SUBMITTALS

- A. Submit manufacturer's product literature and Shop Drawings for approval on materials in accordance with Section 01300.
- B. The contractor shall maintain complete Record Drawings of the system as the project proceeds. Record Drawings shall specify sprinkler type, pop up height and nozzle for each sprinkler installed. Valve box locations to be referenced by distance in a triangular fashion from a minimum of two permanent locations.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Store and handle all materials in compliance with manufacturers instructions and recommendations. Protect from all possible damage. Minimize on-site storage.
- B. Coordinate a staging area location with the project superintendent. Coordinate on-site storage with Owners Representative.

1.08 GUARANTEE

- A. Obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other legal liabilities.
- B. Warranty the entire irrigation system, both parts and labor for a period of one (1) year from date of acceptance by the Owner.
- C. As part of the one year warranty, perform the first year end blowout and spring start-up for the project site. Coordinate with Grounds Superintendent.

1.09 MAINTENANCE AND OPERATING INSTRUCTIONS

- A. Provide at least four (4) hours of instruction of Owner and/or Owner's personnel upon completion of check/test/start-up/adjust operations (Owner's Representative shall be notified at least one (1) week in advance of check/test/start-up/adjust operations).
- B. Upon completion of work and prior to application for acceptance and final payment, a minimum of two (2) three ring binders titled MAINTENANCE AND OPERATING INSTRUCTIONS FOR THE CHEVERUS HIGH SCHOOL WASHINGTON AVENUE ATHLETIC FIELD IRRIGATION SYSTEM, shall be submitted to the Owner's Representative's office. After review and approval, the copies will be forwarded to the Owner. Included in the Maintenance and Operating binders shall be:
 - 1. One (1) copy of the original irrigation plan;
 - 2. One (1) copy of the Record Drawing;
 - 3. One (1) reproducible of the Record Drawing;
 - 4. A complete set of "APPROVED" submittals of all irrigation equipment.
 - 5. A copy of the suggested "System Operating Schedule" which shall call out the controller program required (zone run time in minutes per day and days per week) in order to provide the desired amount of water to each area under "no-rain" conditions.
 - 6. One (1) copy of the controller valve system wiring diagram.
 - 7. One (1) copy of the manufacturers controller operation manual.

1.10 MAINTENANCE

- A. Maintenance Period: 90 calendar days after Substantial Completion.

- B. Subsequent to Substantial Completion, provide labor, materials, equipment, and services necessary for the full operation of the irrigation systems.
- C. Operation: during the maintenance period, regularly illustrate the operation of the installed systems to Grounds personnel.
 - 1. Adjust irrigation schedule at Owner's direction.
 - 2. Adjust all sprinkler heads.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Use only new materials conforming to the standard(s) applicable to each type, as specified and approved by the Owner's Representative. Provide listed manufacturers products specified, unless approved equals are specified.
- B. The materials chosen for the design of the sprinkler system have been specifically referred to by the manufacturer so as to enable the Owner to establish the level of quality and performance required by the system design. Equipment by other manufacturers may be considered only after written application, at least seven (7) days prior to bid opening, including five (5) copies of specifications, is made by the Bidder and written approval is received from the Owner. Any approved equals must be by complete system only, not components of a system.

2.02 COPPER PIPE

- A. Copper pipe, 2 inch for water supplies shall be Type K, hard copper tubing, meeting ASTM B88 without joints.

2.03 COPPER FITTINGS

- A. Copper fittings shall be wrought copper solder pattern, meeting ANSI B16.22.
- B. Joints shall be soldered with silver solder, ASTM B32, Grade 95TA up to 250 degree using non-corrosive flux. Threaded bronze flanges shall be used for connections of pipe to meters, backflow preventers and valves.
- C. Supply only pipes and fittings that are marked by the manufacturer with the appropriate ASTM designations and pressure ratings and are free from cracks, wrinkles, blisters, dents or other damage.

2.04 PVC IRRIGATION PIPE

- A. Pipe sizes 2-1/2 inch and under shall be PVC, Class 200, 1120, SDR 21, Solvent-Weld PVC, ASTM No. D2241, D3036 as manufactured by Cresline or equal.
- B. Pipe sizes 3 inch and larger shall be PVC, Class 160, 1120, SDR 26, Gasketed Joint PVC, ASTM No. D2241, D3036 as manufactured by Cresline or equal.
- C. All PVC pipe shall be continuously and permanently marked with the manufacturer's name, material, size and schedule or type. The pipe shall be capable of withstanding a long term pressure test (1,000 hours) of 420 psi and a quick term burst test of 630 psi.
- D. The pipe shall conform to U.S. Department of Commerce Commercial Standard CS 207-60, or latest revision. Material shall conform to all requirements of Commercial Standard CS 256-63, or latest version.

2.05 PVC IRRIGATION FITTINGS

- A. Fittings for PVC pipe, sizes 2 inch and smaller, shall be Schedule 40 solvent weld PVC fittings as manufactured by Dura, Lasco or equal.
- B. Fittings for PVC pipe, sizes 2-1/2 inch and larger shall be ring-tite PVC fittings as manufactured by Harco or equal.
- C. Tap tee fittings for PVC, sizes 3 inch, shall be PVC ring-tite fittings as manufactured by Harco or equal.
- D. All main line directional fittings shall be ductile iron ringtite fittings as manufactured by Harco or equal.
- E. PVC solvent shall be Rectorseal Gold, or equal, and shall be used in conjunction with the appropriate primer.
- F. All nipples to be schedule 80 PVC.
- G. Saddles and male adapters shall not be approved for any type of connection on the irrigation system of this project. Use schedule 80 toe nipples and PVC couplings for threaded connections.

2.06 MEDIUM GEAR DRIVEN ROTARY SPRINKLER

- A. The gear driven rotary sprinkler head shall be a Toro model 2001 series and be designed for inground installation. The sprinkler shall be capable of covering 50 foot to 77 foot radius depending on the exact size of the nozzle. The sprinkler shall apply 5.1 to 31.3 gallons per minute of water at 40 to 100 pounds per square inch of pressure and have a recommended operating pressure of 60 PSI.
- B. Water distribution shall be via two screw-in nozzles mounted in a 4" high pop-up nozzle turret. Nozzles shall be color coded for easy identification.
- C. An arc memory feature shall return arc to previous setting if nozzle is turned beyond setting.
- D. A rubber cover shall be a standard feature on the sprinkler head.
- E. Gear-drive shall be of a bi-directional, planetary, water-lubricated design and be housed in body with dimensions of 8.50" height, 2.50" diameter and an exposed surface of 3.38". Inlet to body shall be 1" NPT female-thread.
- F. The sprinkler shall apply water at a precipitation rate of .20" to .63" of water per hour.
- G. The sprinkler shall have a 100 percent warranty for 5 years against defects in workmanship.
- H. The sprinkler shall be manufactured by the Toro Company, Irrigation Division, Riverside, CA.

2.07 LARGE GEAR DRIVEN ROTARY SPRINKLER

- A. The gear driven rotary sprinkler head shall be a Toro model 670 series and be designed for inground installation. The sprinkler shall be capable of covering 70 foot to 102 foot radius depending on the exact size of the nozzle. The sprinkler shall apply 31.9 to 66.8 gallons per minute of water at 50 to 100 pounds per square inch of pressure and have a recommended operating pressure of 65 PSI.
- B. Water distribution shall be via one large nozzle in the center mounted in a 2" pop-up nozzle turret. Nozzles shall be colored coded for easy identification.

- C. Body styles available are Electric valve-in-head, Normally open hydraulic valve-in-head, and Check-O-Matic. Body height is 11". Inlet to body shall be 1 1/2", Acme, NPT, or BSP.
- D. The sprinkler shall have a bowl vented discharge allowing for minimal differential in pressure, ensures positive valve closure. Four standard pressure regulators built onto the Valve-in-Head body are 50, 65, 80, and 100 psi.
- E. The sprinkler shall have a 100 percent warranty for 5 years against defects in workmanship.
- F. The sprinkler shall be manufactured by the Toro Company, Irrigation Division, Riverside, California.

2.08 STREAM ROTOR SPRINKLER

- A. The stream rotor shall be capable of covering 16-30 feet at .57-7.51 gpm at 35 to 50 psi, depending on the nozzle.
- B. Water distribution via 12 nozzle orifices mounted in a 1 3/8" diameter nozzle turret. - 3/4" IPS inlet.
- C. Retraction from a stainless steel retraction spring with a wipre seal below the cap. - Rotation from a sealed, oil packed gear assembly.
- D. Choice of 6 nozzles and 9 interchangeable arc discs, insert arc disc below nozzle in the body.
- E. Available body styles: 3" lawn pop, 12" hipop, shrub.
- F. The stream rotor shall be a 340 series as manufactured by The Toro Company, Riverside, CA.

2.09 FIXED SPRAY HEAD

- A. Capable of covering up to a 17 foot radius. Depending on the exact type of nozzle, the sprinkler shall use .05 to 4.58 gpm up to 50 psi.
- B. Nozzle shall be comprised of (1) or more orifices at (2) radius ranges and shall be adjustable from full-on to operation.
- C. Retraction shall be achieved by a heavy duty stainless steel riser in a resilient guide with riser wiper shall be included for continuous operation under the presence of foreign material.
- D. Coverage shall be either full or part circle. The part circle coverage shall be available in arcs of 90, 120, 180, 240, 270, and 360 degrees or adjustable part circle. Also included shall be special patterns including an end strip and center strip nozzle configuration. - Nozzle delivery shall be such as to allow part circle patterns to match full circle patterns in precipitation rates.
- E. The body of the spray head shall be constructed on noncorrosive heavy duty Cicolac plastic. A filter screen shall be included in the nozzle piston.
- F. Available body style: 2", 3", 4" 6", 6" side inlet, 12" side inlet. Available with check valve and pressure compensating devices or MPR nozzles.
- G. The spray head shall be a 570 series as manufactured by The Toro Company, Riverside, CA.

2.10 PLASTIC CONTROL VALVE

- A. The plastic valve shall be manufactured from Cicolac and stainless steel with a wall thickness capable of withstanding pressures up to 220 psi and flows from 20 to 180 gpm.

- B. Globe/angle configuration with FPT inlet and outlet. 1", 1 1/2", and 2" sizes.
- C. The diaphragm shall be made of reinforced rubber and accessible from the top of the valve, without having to remove the body.
- D. The electric solenoid shall be a 24 VAC type, with an inrush current of .300 amps and a holding current of .271 amps. The solenoid shall have 18" lead wires, wired in parallel.
- E. The valve shall have a flow control stem and a manual bleed screw for manual operation. - Check manufacturer's data for friction loss.
- F. The plastic control valve shall be a P-220 series as manufactured by The Toro Company, Riverside, CA.

2.11 MASTER VALVE - TORO 220 SERIES BRASS ELECTRIC VALVE

- A. The automatic brass control valves, (1, 1-1/2, or 2 inches in size) shall be Toro model 220-26-04, 220-26-06, or 220-26-08 brass body, solenoid actuated, diaphragm valve.
- B. The valve body shall be manufactured from brass, with a wall thickness capable of withstanding normal operating pressures of 220 psi. The control valve shall have a fabric-reinforced rubber diaphragm for strength and durability. The range of motion of the diaphragm shall be within a diaphragm stem guide, to ensure proper seat alignment.
- C. The electric solenoid of the valve shall be a 24 V.A.C. type, with an inrush current of .365 Amps, 8.8 V.A., and a holding current of .300 Amps, 7.2 V.A. The solenoid shall also have 22 inch lead wires for the simplification of installation.
- D. The control shall have a flow control to adjust flow volume or to manually close the valve. The valve shall also have a manual bleed screw, for manual opening of the valve in the event of a loss of automatic operation.
- E. A self-flushing filter screen shall be provided in the valve to filter the water supply to the 3-way actuator in the valve.
- F. The control valve shall be operated automatically by way of a three-way triac feature. This feature creates a non-continuous bleed actuation within the valve, allowing only the water on top of the valve to be ported into the discharge cavity of the valve. The non-continuous bleed operation is essential in the reliable operation of the valve in dirty water conditions.
- G. All parts shall be serviceable without removing the valve from line. The valve may be installed at any angle without affecting operation. Check manufacturer's data for friction loss.
- H. The automatic control valve shall be manufactured by the Toro Company, Irrigation Division, Riverside, California.

2.12 CUSTOM COMMAND CONTROLLER

- A. 4 independent programs offer concurrent operation capability. 7-day calendar, odd/even day or day interval options of 1-30 days. Excluded day option, when used with the odd/even day option, allows selection of specific day(s) not to water.
- B. 365-day clock/calendar with excluded day option.
- C. Station run times of 1 minute to 10 hours in 1 minute increments. 16 total start times. Start time stacking within each program.

- D. Season adjust setting from 10 to 200% in 10% increments. Rain delay up to 7 days.
- E. Programmable master valve on/off per program.
- F. Automatic, semi-automatic, manual, and timed manual operation. Wiring. User friendly, 10 position programming dial and large, easy-to-read LCD
- G. Snap out design allows easy removal of control module without disturbing valve.
- H. Self-diagnostic circuit breaker identifies and overrides an electrical malfunction of a valve.
- I. Non volatile memory retains program data through a power loss. Battery backup for up to 90 days during power loss. Lightning Surge Pro System on 24 VAC and station outputs.
- J. Sensor hookups.
- K. Weather resistant metal, locking cabinet with heavy duty internal transformer. Dimensions- 9 ¾" H x 10 ¾" W x 5 ¾" D. UL and CUL listed.
- L. Maximum output per station is 24 VAC, .5 amps. Max. output to valves is 24 VAC, 1.25 amps. Station capacity- up to 2 24 VAC, .25 amp solenoids per station, plus master valve.

2.13 BOOSTER PUMP

- A. The pump shall be a Goulds 2MC1E4(or approved equal) 1 horse power, 120/240 V, single phase centrifugal pump with the following features:
 - 1. Closed coupled centrifugal type, designed specifically for booster service.
 - 2. The pump shall provide 65 gallons per minute, with a 20 psi boost.
 - 3. The pump size shall be verified according to the demand, available electrical source, available space for the pump body and motor, and related items.
 - 4. The pump start shall be through a relay from the Irrigation Controller.
- B. The safeties for this pump station shall include the following:
 - 1. Hotstop Pump Protection Unit, as manufactured by Hotstop.
 - 2. 0 to 200 psi pressure gauge.
 - 3. Check valve to be installed at the pump discharge.
 - 4. Brass, pressure regulating valve at the pump discharge, after the check valve.
 - 5. High flow, low level cut-off switches.
 - 6. Surge protection.

2.14 GROUNDING

- A. Controller shall be grounded to cold water pipe in the building.

2.15 WIRE

- A. Valve power wire shall be minimum #14, common wire minimum #12, single strand, solid copper, 600v, UL Listed, polyethylene jacketed, direct burial and shall meet all state and local codes for this service. Individual wires must be used for each zone valve. Common wire shall be white in color. White color shall be used for common wire only. Power wires shall be red in color. Extra power wires for future use shall be blue in color. Increase wire size as necessary to limit voltage drop to 3%.
- B. Wires from controller to each valve shall be continuous, without splices.

- 2.16 PIPE SLEEVES UNDER PAVEMENTS & WALKS
- A. Electrical sleeves for irrigation wiring shall be installed under non-soil area using 3 inch electrical conduit. Run a second conduit under non-soil areas for future use.
 - B. Provide additional conduit from controller location to exterior of building for future addition to irrigation system. Conduit shall be 2 inch PVC electrical conduit.
- 2.17 WATER METER
- A. Water meter shall be 2 inch Neptune, Schlumberger or equal turbo meters, AWWA approved, with digital ARB mounted on outside of building. Install meters as per requirements of the Portland Water District.
- 2.18 PRESSURE TANK
- A. Pre-charged pressure tank shall be of cold rolled steel construction with 1-1/4 inch bottom discharge and replaceable air valve. Tank shall have minimum 109 gallon capacity, manufactured by Clayton Mark, Model #CM350 or approved equal.
- 2.19 PRESSURE SWITCH ASSEMBLY
- A. Assembly shall consist of a 1-1/4 inch brass cross, #FSG2 pressure switch with 65/85 setting and 1/4 inch connection thread, 2 inch diameter pressure gauge with 160 P.S.I. reading range, #5372 pressure relief valve with 100 P.S.I. setting and #6701 3/4 inch boiler drain. Switch assembly to be as manufactured by Clayton Mark or approved equal.
- 2.20 SPARES
- A. In addition to all materials needed for installation, provide for the following spare parts:
 1. Sets of tools for repair and maintenance of sprinklers supplied.
 2. Gate valve tee handle wrenches, 5 foot long.
 3. 30 inch "Devils Fork" valve wrenches.
 4. Sets of spare keys for controller cabinet.
 5. Each type of sprinkler
- 2.21 CONTROL AND COMMON WIRE
- A. The wire shall have the following features:
 1. All control and common wire shall be #14/1 U.F. direct burial type.
 2. The wire shall be solid copper and insulated with polyethylene or polyvinylchloride. Control wire shall be red in color. Common wire shall be white in color.
 3. Expansion curls shall be provided within 3 feet of each wire connection to a solenoid and at least every 300 feet in length.
- 2.22 WIRE SPLICES
- A. The wire shall have the following features:
 1. Wire splicing kits for single U.F. wire connections shall be direct burial kits consisting of sealant which shall not set up hard allowing splices to be reworked without cutting wires. Application temperature range of 32 to 120 degrees F, and service 600 VAC maximum.
 2. D.B.Y. kits shall allow connections of two to five #18 AWG or two #12 AWG solid or stranded copper wires. DBR kits shall allow connections to two to five #16 AWG or three #10 AWG solid or stranded copper wires.

2.23 SWING JOINT ASSEMBLY

- A. The swing joints shall have the following features:
1. All 1" and 1-1/2" swing joint assemblies for sprinklers shall be pre-assembled (from the factory) units made of Schedule 80 PVC, manufactured by Dura Plastics of Beaumont, CA.
 2. Swing joint consists of (4) 90 degree elbows and (1) 12" long nipple with 90 degree bend on one end. All swing joint assemblies shall be made from virgin PVC Type 1, Cell Classification 12454-B material listed for potable water conveyance by NSF. Working pressure shall be 200 psi combined static and surge.
 3. The flexible swing joints for 3/4" inlet sprinklers shall consist of (2) 90 degree fpt els and a piece of 3/8" thick walled polyethylene pipe known as "Funny Pipe" not to be more than 36" in length.
 4. The quick coupler swing joints shall have a brass nipple to attach to the base of the quick coupler. The unit shall be constructed on schedule 40 pvc with (2) els and a schedule 40 pvc plate for locking the quick coupler down.

2.24 RAINSWITCH

- A. The rainswitch device shall have the following features:
1. Designed to prevent sprinkler operation during rainfall. There shall be one rain gauge per controller.
 2. The normally-open/ normally-closed microswitch shall be rated 125 VAC, 4 amp. Unit to be U.L. listed. An adjustment knob shall adjust the shut-off point between 1/8 inch to 1 inch.
- B. The rainswitch shall be Model 850-74 as manufactured by The Toro Company, Riverside, CA.

PART 3 - EXECUTION

3.01 GENERAL

- A. Examine contract documents applying to this Section noting any discrepancies and bringing same to the attention of the Owner's Representative for timely resolution.
- B. Make field measurements necessary for the work noting the relationship of the irrigation work to the other trades. Coordinate with the Owner's Representative and the Project Superintendent. Project shall be laid out essentially as indicated on the Irrigation Plans, making minor adjustments for variations in the planting arrangement. Major changes shall be reviewed with the Owner's Representative prior to proceeding.
- C. At all times, protect existing irrigation, landscaping, paving, structures, walls, footings, etc. from damage. Inadvertent damage to the work of another trade shall be reported at once.

3.02 INSTALLATION OF PIPE AND FITTINGS

- A. Using proper width trencher chain excavate a straight and true trench to a depth of ± 2 inch of pipe invert elevation.
- B. Pipe shall be laid on undisturbed trench bottom provided suitable base is available - no rock larger than 1 inch or sharp edges. If not, excavate to 2 inch below pipe invert and provide sand base or crushed stone upon which to lay pipe.
- C. Backfilling shall be accomplished as follows: the first 10 inch of backfill material shall contain no foreign matter and no rock larger than 1 inch in diameter. Carefully place material around pipe and wire and tamp in place. Remainder of backfill shall be laid-up in 6 inch (maximum) lifts and tamped to compaction with mechanical equipment matching adjacent undisturbed area. Frozen material shall not be used for backfill.

- D. Clean bell and spigot ends and make all gasketed joints in strict accordance with manufacturer's recommendations, making certain not to apply an excess of lubricant, and wiping off any excess lubricant from each connection. Maximum deflection per joint shall not exceed manufacturer's recommendations.
1. Make all solvent-weld joints in strict accordance with manufacturer's recommendations, making certain not to apply an excess of primer or solvent, and wiping off excess solvent from each connection. Allow connections to set minimum 24 hours before pulling or pressure is applied to the system.
 2. Provide for expansion and contraction as recommended. Wire shall be laid in same trench as mainline and at pipe invert (see 3.08, below).
- E. Mainline pipe shall have minimum 22 inches of COVER (excavate to invert as required by pipe size).
- F. Lateral pipe shall have minimum 18 inches of COVER (excavate to invert as required by pipe size).
- G. Cut plastic pipe with hand saw or pipe-cutting tool, removing all burrs at cut ends. All pipe cuts are to be square and true. Bevel cut end as required to conform to manufacturer's specifications.
- H. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the trench. At times, when installation of the piping is not in progress, the open end(s) of the pipe shall be closed by a watertight plug or other means. All piping which cannot temporarily be joined shall be sealed to make as watertight as possible. This provision shall apply during the lunch hour as well as overnight. Pipe not to be installed that day shall not be laid out. Should water enter the trench during or after installation of the piping, no additional piping may be installed or backfilled until all water is removed from the trench. Pipe shall not be installed when water is in the trench, when precipitation is occurring, or when the ambient temperature is at 35° F or below. PVC pipe shall be snaked in the trench to accommodate for expansion and contraction due to changes in temperature.
- I. Route the pipe as necessary to prevent damage to tree roots. Maintain a minimum distance of 18 inches, if possible with all mainline and lateral line piping from trees. Where trenching must occur near trees or within drip lines, discuss the routing with the Owner's Representative and the Project Superintendent and if directed, provide proper root pruning and sealing methods to all roots 1 inch and larger.
 - J. Throughout the guarantee period refill any trenches that have settled due to incomplete compaction.
 - K. Pulling of pipe sizes 2 inches and smaller will be allowed provided soil is suitable and specified depth of bury can be maintained.
 - L. Pipe shall be installed by hand through sleeving.
- 3.03 SLEEVING INSTALLATION
- A. Sleeving shall be used wherever wire or piping is going under a non-soil area, generally where indicated on the drawings. Cutting and patching will not be permitted. Irrigation sleeving installation shall be provided by boring underneath walks and roads.
 - B. Sleeving installations shall be fully coordinated with other construction operations before any installation takes place.
 - C. Sleeving to have a minimum depth of 12 inches of cover.

3.04 THRUST BLOCKING

- A. Ringtite pipe and fittings shall be blocked with an adequately sized thrust block as per ASAE Standard S376.1 and as depicted in the details. Blocking shall be in accordance with pipe and fitting manufacturer's recommendations. Thrust blocks shall be installed against undisturbed soil in all cases. Concrete thrust blocks shall utilize 3000 psi concrete mixture. Supply material needed for thrust blocking.

3.05 MAINLINE ISOLATION VALVE INSTALLATION

- A. Install isolation valves on mainline per detail where indicated on the drawings. Install isolation valves on a level crushed stone base so that they can be easily opened or closed by with the appropriate valve wrench. Install specified polyiron valve box over each mainline isolation valve.
- B. Provide thrust blocks for ringtite valves as per detail.

3.06 VALVE BOX INSTALLATION

- A. Remove and preserve established turf where re-use is anticipated.
- B. Furnish and install a valve access box for each electric valve, quick coupling valve, isolation valve, valve manifold and wire splice.
- C. Valve access boxes shall be installed on a minimum 4 inch crushed stone base. Finish elevation of all boxes shall be a minimum of 4 inches and a maximum of 6 inches below grade.

3.07 VALVE INSTALLATION

- A. Valves shall be installed on a level crushed stone base. Grade of bases shall be consistent throughout the project so that finish grades fall within the limits of work. Valves shall be set plumb with adjusting handle and all bolts, screws and wiring accessible through the valve box opening.

3.08 WIRING INSTALLATION

- A. Wiring shall be installed along with the main line. Multiple wire bundles shall be cinched together at maximum 12 foot centers using plastic cable cinches and shall be laid beside, and at the same invert as, the irrigation lines. Sufficient slack for expansion and contraction shall be maintained and wiring shall at no point be installed tightly. Provide an additional 8 inches to 12 inches slack at all changes of direction. Wiring in valve boxes shall be a sufficient length to allow the valve solenoid, splice, and all connections to be brought above grade for servicing. This additional slack shall be coiled for neatness in the valve box. Each valve shall have a separate continuous wire back to the controller.
- B. Wire shall be laid in trenches and shall be carefully back-filled to avoid any damage to the wire insulation or wire conductors themselves. In areas of unsuitable material, the trench shall have a 2 inches layer of sand or stone dust on the bottom before the wires are laid into the trench and back-filled. The wires shall have a minimum of 12 inches of cover. Wire not to be installed that day shall not be laid out.
- C. Provide a common ground wire of white color. No white color shall be used for power wire. Power wire shall be red in color. Blue shall be used for extra power wires where indicated on the drawings.
- D. Service wiring in connection with drawings and local codes for 24-volt service.
- E. Provide a complete wiring diagram showing wire routing for the connections between the controller and valves.

- F. Provide extra wires coiled neatly in valve box where indicated on the drawings.
- 3.09 CONTROLLER INSTALLATION
- A. Mount controller in the Maintenance Building, generally where shown on the drawings. Wire valves into controller and set program.
 - B. Final locations shall be as approved/directed by the Owner's Representative.
 - C. All wiring in building shall be run in conduit.
- 3.10 RAIN SHUT OFF INSTALLATION
- A. Install rain shut-off with protective shield. Coordinate final location of rain shut-off with Owner's Representative.
- 3.11 SPRINKLER INSTALLATION
- A. Sprinklers shall be mounted on three ell prefabricated, double o-ring PVC swing joints. Minimum swing joint length is to be 12 inches.
 - B. Adjust sprinkler zone pressure with flow-control on valve.
 - C. Install sprinklers as per details.
- 3.12 QUICK COUPLING VALVE INSTALLATION
- A. Provide quick coupling valves where indicated on the drawings.
 - B. Quick couplers to be installed on 1 inch three ell prefabricated, double o-ring PVC swing joints minimum twelve inches in length, with brass insert and 1 x appropriate length nipple, as manufactured by Lasco or approved equal.
- 3.13 BOOSTER PUMP INSTALLATION
- A. Pump, tank and associated equipment shall be installed in the utility building with the plumbing tap, approximately where indicated on the drawings.
 - B. Equipment shall be installed on concrete floor slab.
 - C. Piping for pumping system shall be Type K copper piping. Piping downstream of the pump shall be 2 inch.
 - D. Install check valve on downstream side of booster pump.
- 3.14 MOTOR STARTER INSTALLATION
- A. Install motor starter for booster pump on wall in close proximity to the irrigation controller. Coordinate final location with Owner's Representative and electrical contractor.
- 3.15 LAWN RENOVATION
- A. Repair all ruts, depressions, etc. caused by the installation of the irrigation system and use of equipment on the turf areas. Use caution in the routing and use of heavy machinery on the turf areas.

3.16 CHECK/TEST/START-UP/ADJUST

- A. Flushing: After all piping, valves and sprinkler bodies are in place and connected, but prior to installation of sprinkler internals, flush piping under a full head of water.
- B. Testing: Leakage test: test all lines for leaks under operating pressure. Repair all leaks and re-test. Coverage test: perform a coverage test in the presence of the Owner's Representative (notify Irrigation Consultant at least seven (7) days in advance of scheduled coverage test). Representative will determine if the water coverage is complete and adequate. Readjust heads and/or head locations as necessary or directed to achieve proper coverage.

3.17 FIELD ADJUSTMENT

- A. Adjust sprinkler heads, valve boxes, and quick coupling valves to grade as required, so that they will not be damaged by mowing operations.
- B. Continue sprinkler coverage adjustment as required by settlement, etc., throughout the guarantee period.
- C. Each control zone shall be operated for a minimum of 5 minutes and all sprinklers checked for consistency of delivering water. Adjustments shall be made to sprinklers which are not consistent to the point that they match the manufacturer's standards. Sprinklers, valves, timing devices or other mechanical or electrical components, which fail to meet these standards, shall be rejected, replaced and tested until they meet the manufacturer's standards.

3.18 ACCEPTANCE AND OPERATION BY OWNER

- A. Upon completion of the work and acceptance by the Owner, train the Owner's Representative(s) in the operation of the system. Furnish, in addition to the Record Drawings and operational manuals, copies of all available, specification sheets and catalog sheets to the Owner's personnel responsible for the operation of the irrigation system. Guarantee all parts and labor for a minimum period of one (1) years from date of acceptance.

3.19 CLEAN UP

- A. Upon completion of all installation work, Contractor shall remove all leftover materials and equipment from the site in a safe and legal manner.
- B. Contractor shall leave the site clean and free of soil, stones and other debris generated from installation of the irrigation system.

END OF SECTION

SECTION 02820

TENNIS COURTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide labor, materials, and equipment for Tennis Courts shown on the drawings or specified herein, including:
 - 1. Non-woven geotextile layer.
 - 2. Crushed stone layer.
 - 3. Bituminous concrete binder and surface layers.
 - 4. Tennis court surfacing system.
 - a. Prime coat for bituminous.
 - b. Resilient cushion layers.
 - c. Textured wearing surface colored layers.
 - d. Painted playing lines.
 - 5. Net posts.
- C. Installation of the gravel subbase, underdrainage, and chainlink fencing is covered by other sections of these documents, and is not part of the work of the tennis court construction firm.

1.02 QUALITY ASSURANCE

- A. Installer: All work within this section shall be furnished and installed by one of the following tennis court construction firms:
 - 1. Maine Tennis & Track, Gray, ME (207-657-2140).
 - 2. Vermont Tennis Court Surfacing, St. Johnsbury, VT (1-800-237-6774).

1.03 SUBMITTALS

- A. Submit manufacturer's product literature and Shop Drawings for approval on materials in accordance with Section 01300.
- B. Submit bituminous pavement mix design of each grade.

1.04 DELIVERY, STORAGE AND PROTECTION

- A. Deliver materials to the site in an undamaged condition. Carefully store materials off the ground to provide proper protection against oxidation, and other damage caused by ground contact.

PART 2 - PRODUCTS

2.01 NON-WOVEN GEOTEXTILE

- A. As specified in Section 02700 - Sewerage and Storm Drainage, Item 2.07 - Geotextile Drainage Fabric.

2.02 CRUSHED STONE

- A. As specified in Section 02200 - Earthwork, Item 2.07 - Crushed Stone.

2.03 BITUMINOUS CONCRETE

- A. Binder and Surface course materials as specified in Section 02500 -Paving and Surfacing, Item 2.01- Bituminous Concrete Materials.

2.04 TENNIS COURT SURFACING SYSTEM

- A. On the finished bituminous surface, place a heavy-bodied, acrylic latex filler/leveling coat. "Elite Fill" by A. D. Rossi Corp., or approved equal.
- B. Over the leveling course, place heavy-bodied resilient elastomeric cushion courses. "Elite Turf" and "Elite Base" by A. D. Rossi Corp., or approved equal.
- C. Over the resilient cushion courses, place three coats of heavy-bodied textured acrylic-latex color coating. "Elite Color" by A. D. Rossi Corp., or approved equal.
- D. Hand-paint the court linework using two coats of textured acrylic paint designed for heavy foot traffic. "Elite Line" by A. D. Rossi Corp., or approved equal.

2.05 NET POSTS

- A. Heavy-duty metal net posts with all attachments. (Nets are not included).

PART 3 - EXECUTION

3.01 PAVEMENT LAYER

- A. Place geotextile, crushed stone, and bituminous layers as described in other sections of these specifications.

3.02 TENNIS COURT SURFACING SYSTEM

- A. Install surfacing system, using qualified skilled workmen, per manufacturer's recommendations, to produce a high quality finished surface.

3.03 POST INSTALLATION

- A. Install posts for the fence and playfield equipment on previously prepared surfaces to line and grade as indicated. Install in accordance with the manufacturer's installation instructions.

END OF SECTION

SECTION 02930

LAWNS AND GRASSES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide labor, materials and equipment required to complete loaming, fine grading, liming, fertilizing, and seeding.

1.02 QUALITY ASSURANCE

- A. Qualifications of Workmen: Provide at least one person who shall be present during execution of this portion of the Work, be thoroughly familiar with the type of materials being installed and the best methods for their installation, and direct work performed under this Section.
- B. Standards:
 - 1. Planting material shall meet or exceed the specifications of Federal and State laws requiring inspection for plant disease and insect control.
 - 2. Quality shall conform with the current edition of "Horticultural Standards" for number one grade nursery stock, as adopted by the American Association of Nurserymen.

1.03 SUBMITTALS

- A. Materials List: Before seeding materials are delivered to the job site, submit to the Architect a complete list of seeding and other items proposed to be installed.
 - 1. Include complete data on source, size and quality.
 - 2. Demonstrate complete conformance with the requirements of this Section.
 - 3. This shall in no way be construed as permitting substitution for specific items described in the Drawings or these Specifications unless the substitution has been approved in advance by the Architect.
- B. Certificates:
 - 1. Certificates required by law shall accompany shipments.
 - 2. Prior to installation, deliver certificates to the Architect.

1.04 PRODUCT HANDLING

- A. Delivery and Storage:
 - 1. Deliver items to the site in their original containers with labels intact and legible at time of Architect's inspection.
 - 2. Immediately remove from the site seeding materials which are not true to name and materials which do not comply with the provisions of this Section of these Specifications.
 - 3. Protect seeding materials before, during and after installation and to protect the installed work and materials of other trades.
- B. Replacements: In the event of damage or rejection, immediately make repairs and replacements necessary to the approval of the Architect, at no additional cost to the Owner.

1.05 PLANTING TIME

- A. Seeding: Seeding shall be done between August 15th to September 15th and/or April 15th to June 15th.

- B. Variance: If special conditions exist which may warrant a variance in the above planting dates, a written request shall be submitted to the Architect stating the special conditions for the proposed variance. Permission for the variance will be given if warranted in the opinion of the Architect. Regardless of the time of seeding, the Contractor shall be responsible for a full growth of grass.
- C. Place permanent soil stabilization within 15 days of final grading.

PART 2 - PRODUCTS

2.01 TOPSOIL

- A. General: Topsoil, except that existing on the site, will not be made available by the Owner. The Contractor shall be responsible for supplying any additional topsoil needed and hauling it to the site. It shall be obtained from naturally well-drained areas. Whether from on-site or off-site source, the topsoil shall be a fertile, friable natural loam containing no less than 7% nor more than 18% organic matter. The pH of the soil shall be between 6 and 7 and shall not contain soluble salts greater than 500 parts per million. It shall not contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil and shall be cleaned and free from clay lumps, stones, stumps, roots, or similar substances 3/4-inch or more in diameter, debris, or other objects which might be a hindrance to planting operations. Soil shall not be used for planting while in frozen or muddy condition. Furnish all topsoil required to complete the work. Materials removed shall be disposed of by the Contractor.
- B. Maximum particle size of 3/4-inch, with maximum of 3% retained on the 1/4-inch mesh sieve.
Composition in the following range:

Silt	15 to 40%
Sand	30 to 70%
Clay	3 to 15%
- C. Initial Testing: Take representative samples of topsoil from the site and from borrow sources and submit samples to a Soil Testing Laboratory for chemical and physical analysis. Each sample shall be made by combining 10 small grab samples from throughout the source. Indicate to the testing agencies that turf is to be planted and the name of the Owner. Forward to the Architect two copies of analysis and recommendations of the testing agencies.
- D. Final Testing: After the final topsoil has been amended and mixed as recommended, take representative samples and submit them to a Soil Testing Laboratory for chemical and physical analysis. Each sample shall be made by combining 10 small grab samples from throughout the source. Make final amendments to the topsoil to meet the specification, based on the test results.

2.02 SPORTSFIELD LOAM MIX, TYPE 'A'

- A. Import loamy sand from an off-site source for the sportsfield areas inside the chainlink fence. The Contractor shall be responsible for supplying and hauling it to the site. It shall be obtained from naturally well-drained areas, and shall be a fertile, friable natural loam containing no less than 7% nor more than 18% organic matter. The pH of the soil shall be between 6 and 7 and shall not contain soluble salts greater than 500 parts per million. It shall not contain toxic substances which may be harmful to plant growth. Soil shall be without admixture of subsoil and shall be cleaned and free from clay lumps, stones, stumps, roots, or similar substances 3/4-inch or more in diameter, debris, or other objects which might be a hindrance to planting operations. Soil shall not be used for planting while in frozen or muddy condition. Furnish all soil required to complete the work.

- B. Maximum particle size of 3/4-inch, with maximum of 3% retained on the 1/4-inch mesh sieve.
Composition in the following range:

Sand	60 to 80%
Silt	15 to 25%
Clay	10 to 15%
- C. Thoroughly mix 2" of compost with 6" of imported loamy sand to yield an 8" finish thickness on the sportsfield areas.
- D. Perform initial testing of the loamy sand and final testing of the sportsfield loam mix as described above.

2.02 FERTILIZER

- A. Starter Fertilizer: shall be a commercial balanced fertilizer(18-24-12), delivered to the site in bags labeled with manufacturer's guaranteed analysis. Approximately 30% to 50% of the fertilizer shall be a slow release form (UF IDBU SCU).
- B. Fertilizer shall be mixed, as specified, and delivered to the site in standard, unopened containers showing weight, guaranteed analysis, and name of manufacturer.
- C. Special Protection: If stored at the site, protect fertilizer from the elements.

2.03 SOIL AMENDMENTS

- A. Peat: Peat shall be moist. It shall be finely shredded, consist of 90 percent organic moss peat, be brown in color, and suitable for horticultural purposes. Shredded particles shall not exceed one (1) inch in diameter. Peat shall be measured in air dry condition, containing not more than 35 percent moisture by weight. Ash content shall not exceed 10 percent.
- B. Compost: Compost shall meet Maine Department of Environmental Protection guidelines under Chapter 567: Section C and must be approved for commercial landscaping. Vendor shall provide approximate nitrogen availability calculations for soil blending and complete set of available plant nutrients, pH, trace metals, total volatile solids, soluble salts, measured water holding capacity and maturity measurements. Compost shall be weed seed free and consist of approximately equal portions of municipal bio-solids, short paper fiber, wood ash and sawdust and be the product of 15 days of thermophillic aerobic decomposition followed by 90 days of curing. Compost will be adequately stabilized, pathogen free with acceptable odor. The material shall pass through a 3/8" mesh screen, be friable and free of stones, sticks and all objectionable debris. Compost source is subject to the review of the Engineer.

Compost Parameters:

C:N Ratio	20:1 - 35:1
Total Nitrogen	<1.5%
Maturity Index	Stable - Very Stable
Texture	100% passing 3/8" screen
Soluble Salts	<4 mmhos/cm
Moisture Content	40-60%
Total Volatile Solids	<60%

Density 800 - 1200 lbs./cy

Hawk Ridge Compost from New England Organics, Falmouth, Maine, or approved equal.

- C. Limestone: Ground dolomitic limestone shall be an approved agricultural limestone and shall contain not less than 85 percent of total carbonates with a minimum of 30% magnesium carbonates. Limestone shall be ground to such fineness that 50 percent will pass a 100 mesh sieve, and 90 percent will pass a 20 mesh sieve.

2.04 GRASS SEED

- A. General: Grass seed shall be:
 1. Free from noxious weed seeds and re-cleaned.
 2. Grade A recent crop seed.
 3. Treated with appropriate fungicide at time of mixing.
 4. Delivered to the site in sealed containers with dealer's guaranteed analysis.
 5. Each variety of seed shall have percentages of germination of not less than 80%, and a percentage of purity of not less than 85%.

- B. Seed Mix Proportions by Weight:

<u>Description</u>	<u>Kind of Grass</u>	<u>Proportion by Weight</u>
Sportsfield Seed	-Kentucky Bluegrass-"Quantum Leap"	25%
	-Kentucky Bluegrass-"Eclipse"	25%
	-Perennial Rye "Futura 3000"	50%
General Lawn Areas and adjacent to Brook	"Allen, Sterling, & Lotrup Field Mix"(Falmouth - 781-4142)	
consisting of:	Timmathy "Climax"	70%
	Clover "Alsike"	10%
	Clover "Medium Red"	5%
	Clover "Ladino"	5%
	Redtop	5%
	Annual Rye(added for quick growth)	5%

- C. Weed seed content shall not exceed 0.25 percent. Wet, moldy, or otherwise damaged seed will be rejected.

2.05 MULCH

- A. DO NOT USE HAY MULCH ON SPORTSFIELDS.
- B. Mulch shall consist of long fibered straw, reasonably free from noxious weeds or other undesirable material. No material shall be used which is so wet, decayed, or compacted as to inhibit even and uniform spreading. No chopped hay, grass clippings or other short fibered material shall be used unless directed.

2.06 EROSION CONTROL MESH

- A. Open weave jute mesh of loosely twisted construction averaging 1.22 pounds per linear yard, or excelsior blanket material.
- B. Other synthetic mesh and mulch blankets may be used if approved by the Architect.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Inspection:
 - 1. Prior to work of this Section, carefully inspect the installed work of other trades, and verify that such work is complete to the point where this installation may properly commence.
 - 2. Verify that seeding may be completed in accordance with the original design and the referenced standards.

3.02 SUBGRADE PREPARATION

- A. The Contractor shall do whatever grading is necessary to bring the subgrade to a true, smooth slope, parallel and at the depth shown on the Drawings below finished grade, for seed bed areas.
- B. There must be sufficient grade staked, as determined by the Architect, to insure correct line and grade of subgrade and of finished grade.
- C. Immediately prior to being covered with topsoil, the top 3" to 6" of the subgrade shall be raked or otherwise loosened and shall be free of stones, rock and other foreign material 1-1/2" or greater in dimensions.

3.03 FINISH GRADE PREPARATION

- A. Topsoil shall not be delivered or worked in a frozen or muddy condition.
- B. Place and spread topsoil over approved areas to a depth sufficiently greater than shown on the Drawings in "loam and seed" lawn areas and in plant bed areas so that after natural settlement and light rolling, the completed work will conform to the lines, grades, and elevations indicated.
- C. After topsoil has been spread in approved areas, it shall be carefully prepared by scarifying or harrowing, and stones over one inch in diameter shall be removed from the topsoil. It shall be free of smaller stones in excessive quantities, as determined by the Architect.
- D. The whole surface shall then be rolled with a roller which weighs not more than 100 pounds per foot of width. During the rolling, all depressions caused by settlement of rolling shall be filled with additional topsoil, and the surface shall be regraded and rolled until presenting a smooth and even finish to the required grade.

3.04 SPORTSFIELD PREPARATION

- A. In addition to the general requirements listed above, sportsfields shall be prepared with some special considerations.
- B. Set sportsfield grades by laser equipment to assure well drained fields and surfaces.
- C. Use high-floatation turf tires on equipment used for finish grading. Test the finished surfaces with a soil densimeter to assure soil hardness in the range of 85 to 88% maximum dry density.

3.05 SEED BED PREPARATION

- A. After the areas to be seeded have been brought to the grades specified, spread limestone at a rate of 100 pounds minimum per 1,000 square feet, or as recommended by soil testing agencies.
- B. Apply starter fertilizer at a rate of 15# per 1000 sq.ft. just prior to final grading of the site. Thoroughly and evenly incorporate fertilizer and lime with the soil to a depth of 3" by discing or other approved

method. In areas inaccessible to power equipment, use hand tools. Adjacent to trees and shrubs use hand tools to avoid disturbance of the roots. Provide a second application of starter fertilizer at a rate of 6# per 1000 sq.ft. approximately 2 weeks after seedling emergence.

- C. Reconstitute the soil, as may be recommended by a soil testing agency, prior to use as planting soil. Any deficiencies in the topsoil shall be corrected by the Contractor, as recommended, at no expense to the Owner.
- D. After incorporation of fertilizer and lime into the soil, the seed bed shall be fine graded to remove all ridges and depressions and the surface cleared of all debris and of all stones one inch or more in diameter.

3.06 SEEDING

- A. Immediately before seeding, the ground shall be restored, as necessary, to a loose friable condition by discing or other approved method to a depth of not less than 2". The surface shall be cleared of all debris and of all stones 1" or more in diameter.
- B. Seed with specified grass seed, sowing evenly with a Brillion seeder or other approved mechanical seeder at the rate of 5 pounds per 1,000 square feet. Sow 50% in one direction and 50% at right angles to the first seeding. Spread seed when soil is moist. Cultipacker, or approved similar equipment, may be used to cover the seed and to firm the seed bed in one operation. In areas inaccessible to cultipacker, the seeded ground shall be lightly raked and rolled in two directions with a water ballast roller. Extreme care shall be taken during seeding and raking to insure that no change shall occur in the finished grades and that the seed is not raked from one spot to another.
- C. Crown Vetch when called for, shall be added to the grass seed mixture and sown at the rate of 1-1/2 pounds per 1000 sq. ft. The Crown Vetch seed shall be treated with inoculant immediately prior to sowing in accordance with the directions of the supplier. When the hydraulic method of seeding is used, 4 times the normal recommended rate of inoculant shall be used.
- D. Hydro-seeding may be used for general lawn areas and low maintenance areas, but NOT FOR SPORTSFIELDS. Certify in writing that the hydro-seed fertilizer mix is as herein specified and applied at the equivalent rate.
- E. Promptly after seeding, wet the seed bed thoroughly, keeping all areas moist throughout the germination period.
- F. Mulch shall be placed immediately after seeding. Hay that has been thoroughly fluffed shall be spread evenly and uniformly at the rate of two to three tons per acre. Lumps and thick mulch materials shall be thinned. Anchor hay mulch with erosion control mesh on slopes steeper than 6 horizontal to one vertical (16%) and as necessary to prevent movement. Anchor mesh as recommended by manufacturer. Hydromulching is an acceptable method of mulching. The mulch shall consist of natural cellulose wood fibre containing no materials which will inhibit seed germination or plant growth. Sufficient non-toxic water soluble green dye shall be added to provide a definite color contrast to the ground surface to aid in even distribution. Wood fibre mulch shall be supplied in uniform packages not exceeding 100 pounds each. Each package shall be marked to show the air dry weight.
- G. Take whatever measures are necessary to protect the seeded area while it is germinating. These measures shall include furnishing warnings signs, barriers, and other needed measures of protection.

3.07 MAINTENANCE

- A. Maintenance shall begin immediately after seeding operations and shall continue until Provisional Acceptance or for a minimum of 60 days, whichever is longer.

- B. Maintenance of seed areas shall consist of watering, weeding, curing, repair of all erosion, and reseeding as necessary to establish a uniform stand of grass. Lawns shall be watered in a satisfactory manner during and immediately after planting, and not less than twice per week until final acceptance. Areas which fail to show a uniform stand of grass for any reason shall be reseeded repeatedly until a uniform stand is attained. Scattered bare spots, evenly distributed and not exceeding 8" square of any lawn area, will be allowed at the discretion of the Architect.
- C. At the time of the first cutting, there shall be a uniform stand between 3 and 3-1/2" high, and mower blades shall be set between 2-1/2" and 3" high. Provide at least 3 cuttings of grass in lawn areas not closer than 10 days apart. Catch shall be representative of seed specified.
- D. Correct graded areas which settle during the first 12 months after Provisional Acceptance in lawn areas, including loaming and seeding. Reseeding shall be done as specified above.

3.08 PROVISIONAL ACCEPTANCE

- A. The Architect shall inspect the work for Provisional Acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date of inspection. Upon completion and reinspection of repairs or renewals necessary in the judgement of the Architect, he shall certify in writing to the Contractor as to the Provisional Acceptance of the work.

3.09 CLEAN-UP

- A. After completion of planting operations, dispose of debris and excess material to the satisfaction of the Architect. Pavements shall be broomed and hosed clean.

3.10 FINAL INSPECTION AND ACCEPTANCE

- A. At the end of the guarantee period, the Architect will inspect guaranteed work for the Final Acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date for final inspection.
- B. Upon completion and reinspection of repairs or renewals necessary in the judgement of the Architect at that time, he shall certify in writing to the Contractor as to the Final Acceptance of the project.

END OF SECTION

SECTION 02950

TREES, PLANTS, AND GROUND COVERS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Planting required for the Work is indicated on the Drawings and, in general, includes planting of trees and shrubs throughout the Work including furnishing all materials, equipment, and labor necessary for root protection, and tree guards where applicable.

1.02 QUALITY ASSURANCE

- A. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, thoroughly familiar with the type of materials being installed and the best methods of their installation, and direct all work performed under this Section.
- B. Standards:
 1. Plants and planting material shall meet or exceed the specifications of Federal and State laws requiring inspection for plant disease and insect control.
 2. Quality and size shall conform with the current edition of "Horticultural Standards" for number one grade nursery stock, as adopted by the American Association of Nurserymen.
 3. Plants shall be true to name and one of each bundle or lot shall be tagged with the name and size of the plants, in accordance with the standards of practice of the American Association of Nurserymen. Botanical names shall take precedence over common names.
 4. Substitutions:
 - a. In the event that trees, shrubs, or other plant material specified in the drawings are in the opinion of the Contractor, impossible or unreasonably difficult to obtain, the Contractor shall immediately notify the Owner's Representative to discuss appropriate substitutions in writing. No substitutions of plant material may be made without the prior written approval of the Owner's Representative.
 - b. Contractor shall notify the Owner's Representative in writing of any plant material that is inappropriate for the proposed site conditions in the opinion of the Contractor. Substitutions shall be processed as per paragraph 4a. above.

1.03 SUBMITTALS

- A. Materials List: Thirty days before any planting materials are delivered to the job site, submit to the Architect a complete list of plants and other items proposed to be installed:
 1. Include a complete data on source, size and quality.
 2. Demonstrate complete conformance with the requirements of this section.
 3. This shall in no way be construed as permitting substitution for specific items described in the Drawings or these Specifications, unless the substitution has been approved in advance by the Architect.
- B. Record Drawings: During the course of the installation, carefully record, in red line, changes made to the planting system layout during installation on a print of the planting Drawings.
- C. Certificates:
 1. Certificates required by law shall accompany shipments.
 2. Upon completion of the installation, deliver certificates to the Architect.
- D. Contractor shall submit sample of shredded bark mulch to be used for Architect approval prior to delivery to site.

1.04 PRODUCT HANDLING

- A. Delivery and Storage:
1. Deliver items to the site in their original containers with labels intact and legible at time of Architect's inspection.
 2. Immediately remove from the site plants which are not true to name and materials which do not comply with the provisions of this Section of these Specifications.
 3. Protect plant materials before, during and after installation and to protect the installed work and materials of other trades.
 4. Provide container grown or freshly dug plant materials. Plant materials which have been in cold storage or heeled-in may be rejected. Do not bend or bind-tie trees or shrubs in such manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery.
- B. Replacements: In the event of damage or rejection, immediately make repairs and replacements necessary to the approval of the Architect, at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 PLANTING SOIL

- A. Shall Be a Natural Fertile, Friable Natural Loam of The Following Types: Sandy loam, clay loam, loam, silt loam, sandy dry loam or other soil approved by Owner's representatives. Soil shall contain from 6 to 20 percent organic matter as determined by the Organic Carbon, 6A, Chemical Analysis Method. Topsoil shall be tested by a recognized laboratory for pH and soluble salts. A pH of between 5 and 7.5 is required and shall not contain soluble salts greater than 500 parts per million. It shall be obtained from naturally well-drained areas. It shall not contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil and shall be cleaned and reasonably free from clay lumps, stones, stumps, roots, or similar substances over 1" in diameter, debris, or other objects which might be a hindrance to planting operations. Soil shall not be used for planting while in a frozen or muddy condition.

2.02 MANURE

- A. Well rotted, unleached, stable or cattle manure which is reasonably free of wood shavings, sawdust or other undesirable liter and contains no chemical or other ingredients harmful to plants.

2.03 COMMERCIAL FERTILIZER

- A. Complete fertilizer with minimum analysis of 10%N, 8%P, 4%K and shall conform to the applicable State fertilizer laws. It shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.

2.04 SOIL AMENDMENT

- A. Shall be peat; a domestic product consisting of partially decomposed vegetable matter of natural occurrence. It shall be brown, clean, low in content of mineral and woody material, mildly acid and granulated or shredded and fortified with organic nitrogen, or an equal commercial soil amendment approved in advance by Architect.

2.05 MOSS PEAT

- A. Brown; acid reaction about 4 to 5 pH; low in content of wood material and free of mineral matter harmful to plant life; water absorbing capacity, 1100 to 2000 percent; moisture content 30 percent natural, shredded or granulated.

2.06 WATER

- A. Contractor shall make, at his expense, whatever arrangements may be necessary to ensure an adequate supply of water to meet the needs of this contract. He shall also furnish necessary hose, equipment, attachments, and accessories for the adequate irrigation of lawns and planted areas as may be required to complete the work as specified.

2.07 BARK MULCH

- A. Shredded bark mulch shall be uniform in size, free of chunks and pieces of wood thicker than 1/4" or longer than 4" and approved by Architect. Mulch must be partially decomposed and of a consistent dark brown color.

2.08 TREE STAKES

- A. Unless otherwise indicated on the Drawings, tree stakes shall be Spruce or Fir, construction grade, rough-sawn, 2" x 2" x 8' long.

2.09 PLANT MATERIALS

- A. Plant materials shall be true to species and variety specified and shall be nursery grown in accordance with good horticultural practice under climatic conditions similar to those in the locality of the project for at least two years. They shall have been root-pruned within the last two years and shall be freshly dug. No heeled-in plants or plants from cold storage will be accepted.
- B. Unless specifically noted otherwise, plants shall be of specimen quality; exceptionally heavy; and symmetrical, so trained or favored in development and appearance as to be unquestionable and outstandingly superior in form, compactness and symmetry. They shall be sound; healthy; vigorous; well-branched and densely foliated when in leaf; free of disease; insects; eggs or larvae; and shall be free from physical damage or conditions that would prevent thriving growth.
- C. Plants shall not be pruned before delivery. Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged or crooked leader, abrasion of bark, sunscalds, disfiguring knots, insect damage, or cuts of limbs over 3/4" in diameter, not completely calloused, will be rejected.
- D. Plants shall conform to measurements specified in the Plant Lists, except that plants larger than specified may be used if approved by the Architect. Use of such plants shall not increase the Contract price. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant.
- E. Caliper measurement shall be taken on the trunk 6" above natural ground line for trees up to 4" in caliper and 12" above the natural ground line for trees over 4" in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to tip. Plants shall be measured when branches are in their normal position. If a range of size is given, no plant shall be less than the minimum size, and not less than 50 percent of the plants shall be as large as the maximum size specified. Measurements specified are minimum size, acceptable after pruning where pruning is required. Plants that meet measurements but do not possess a normal balance between height and spread shall be rejected.

- F. Plants shall be labeled with correct plant name and size. Labels shall be attached securely to all plants, bundles and containers of plant materials delivered with care that those attached directly to plants will not restrict growth.
- G. Substitutions of plant materials will not be permitted, unless authorized in writing by the Architect. If proof is submitted and substantiated in writing that any plant specified is not obtainable, a proposal will be considered for use of the nearest available size or similar variety with a corresponding adjustment of Contract price.
- H. Type of Protection to Roots:
 1. Balled and Burlapped Plants: Plants designated "B&B" in the Plant List shall be balled and burlapped. They shall be dug with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap or similar material and bound with twine, cord, or wire mesh. Where necessary to prevent breaking or cracking of the ball during the process of planting, the ball may be secured to a platform.
 2. Bare-Root Plants: Plant designated "bare-root" in the Plant List shall be dug and the earth removed without injury to the fibrous root system necessary for the full recovery of the plant. Roots shall be covered with a thick coating of mud by puddling or wrapped in wet straw, moss, or other suitable packing material immediately after they are dug, for protection until delivered.
 3. Protection After Delivery: The balls of "B&B" plants which cannot be planted immediately on delivery shall be covered with moist soil or mulch, or other protection from drying winds and sun. Bare-rooted plants shall be planted or heeled-in immediately upon delivery. Plants shall be watered as necessary until planted.

2.10 INSPECTIONS

- A. Certificates of inspection shall accompany invoices for plants as may be required by law for transportation. File certificates with the Architect prior to acceptance of the material. Inspection by Federal or State Governments at place of growth does not preclude rejection of plants at the work site.

2.11 SELECTION AND TAGGING

- A. Plants shall be subject to inspection and approval by the Architect at their place of growth and upon delivery for conformity to specification requirement. Such approval shall not impair the right of inspection and rejection during the progress of the work. A Contractor's representative shall be present at inspections.
- B. Written requests for inspection of plant material at their place of growth shall be submitted to the Architect at least 10 calendar days prior to digging. Written requests shall state the place of growth and quantity of plants to be inspected. The Architect may refuse inspection at this time if, in his judgement, a sufficient quantity of plants are not available for inspection.
- C. Plants identified as "selection specimen" shall be approved and tagged at their place of growth. For distant material, submit photographs for pre-inspection review.

2.12 PLANT LABELS

- A. Plant labels shall be durable, legible stating the correct plant name and size in weather-resistant ink or embossed process lettering.

2.13 GUYING, STAKING AND WRAPPING MATERIALS

- A. Ground anchors shall be castings, stamped steel, or deadmen of wood or other material approved by the Architect. Width across top span and length, exclusive of pin from top to arrowed tip, shall conform to the following list. Assemblies for anchors shall also conform to the following list:
Tree Caliper: 2 - 5 inches
Type: wire
Capacity: 3,500 lbs.
- B. Guying cable shall be five strand, 3/16" diameter galvanized steel cable. Turnbuckles shall be galvanized or dip-painted, having a 3" minimum lengthwise opening fitted with screw eyes. Eyebolts shall be galvanized, having a 1" opening fitted with screw length of 1". Hose shall be suitable lengths of two-ply, reinforced, black rubber hose, 3/4" in diameter.
- C. Stakes for supporting trees shall be 2 inches square or 2-1/2" round, by 8 feet sound wood, treated for one-half their length with creosote or equal.
- D. Wrapping material for tree trunks, shall be standard burlap, heavy crepe paper, or other suitable material, in strips 6 to 10 inches wide.

2.14 TREE PAINT

- A. Tree paint shall be "Cabot Tree Paint," or approved equal.

2.15 ANTI-DESICCANT

- A. Anti-desiccant shall be an emulsion which provides a protective film over plant surface, permeable enough to permit transpiration. It shall be delivered in containers of the manufacturer and mixed according to the manufacturer's directions ("Wiltpruf" manufactured by Nursery Specialty Products Inc., Stubbings Road, Groton Falls, New York, or approved equal.)

PART 3 - EXECUTION

3.01 SITE CONDITIONS

- A. Contractor must examine the subgrade, observe the conditions under which work is to be performed, and notify the Owner's Representative of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Owner's Representative and the Contractor. Commencement of work by Contractor shall signify Contractor's acceptance of conditions as satisfactory.
- B. Determine location of underground utilities and perform work in a manner which will avoid possible damage. If necessary, call Dig-Safe at 1-800-225-4977 (in ME, NH, VT, RI) or 800-322-4844 (in MA). Hand excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes set by others unless removal is mutually agreed upon by all parties concerned.
- C. Owner's Representative shall be contacted in the event that rock, underground construction work, adverse drainage conditions, or other obstructions are encountered in any plant pit or excavation work as specified in this contract. Alternate locations may be selected by the Owner's Representative at no additional cost to the Owner provided that work has not been initiated. Additional charges incurred by concealed contingencies shall be set at a standard time and materials rate agreed upon by both parties prior to initiation of contract.

- D. Where locations cannot be changed, the obstruction shall be removed, or altered, subject to the Owner's Representative's written authorization, to a depth of not greater than 3 feet below grade, or no less than 6 inches below bottom of ball or roots when plant is properly set at the required grade. Contractor shall be paid extra as defined above.

3.02 PLANTING TIME

- A. Planting Shall Be Done with the Following Dates: April 1st to November 15th
- B. Coordination with Lawns: Plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to the Owner's Representative. If planting of trees and shrubs occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

3.03 EXCAVATION OF PLANTING AREAS

- A. Stake out the ground locations for plants and outlines of planting beds and obtain approval of the Landscape Architect before excavation is begun. A minimum of 30 percent of total planting must be staked before inspection will be made. Locations as shown on drawings are approximate. Final positioning of plant material shall be made under supervision of Landscape Architect.
- B. Excavate tree and shrub pits as shown on Drawings.
- C. Separate subgrade soils from the upper topsoil portions and remove immediately wherever encountered during planting operations.
- D. Notify the Architect in writing of soil or drainage conditions which the Contractor considers detrimental to growth of plant material. State condition and submit proposal in writing to the Architect for correcting condition.
- E. Test drainage of suspect plant beds and pits by filling with water twice in succession. Conditions permitting the retention of water in planting beds for more than 12 hours shall be brought to the attention of the Architect.
- F. No planting except ground cover and vines shall be placed closer than 2 feet to pavement or structures.

3.04 PLANTING OPERATIONS

- A. Digging and Handling of Plant Materials to be Relocated: Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled from the bottom of the ball only. In addition to procedure listed below, amend planting soil with a root growth stimulator containing mycorrhiza (M-Roots with mycorrhiza, Root & Gro, or approved equal) in quantities as recommended by manufacturer.
- B. Planting Trees and Shrubs:
 1. Excavate pits in accordance with Typical Planting Details with vertical sides and scarify sides of pit to insure against glazing.
 2. Protect plants from sun or drying winds. Plants that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet moss, or other acceptable material and shall be kept well watered. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled from the bottom of the ball only.
 3. Set plants at same relationship to finished grade as they bore to the ground from which they were dug. Set plant plumb and brace rigidly in position until prepared topsoil has been tamped solidly around ball and roots.

4. Cut and remove ropes, strings and wrappings from top 1/3 of ball after plant has been set. Leave balance of wrappings intact around ball. If wrapping is plastic, remove top 2/3.
 5. Backfill plant pits with prepared planting soil. When plant pits have been backfilled approximately 2/3 full, water thoroughly, eliminating air pockets. After watering, install planting soil to top of pit and repeat watering.
 6. Form shallow saucer around tree as indicated on the Drawings.
 7. Finish grade planting areas to conform to grades on Drawings.
 8. Mulch all pits and beds with a 4" layer of approved shredded bark mulch immediately after planting.
 9. Immediately after planting, water plants thoroughly.
- C. Guying, Staking, Wrapping and Pruning:
1. Guying shall be completed immediately after planting. Drive ground anchors into ground by manual or machine method at approximately 45 degree angle to ground plane and distributed at 120 degree intervals around trunk of tree. Preload anchors after driving until anchor turns in the ground at 90 degree angle to line of driving force. Anchor assembly will rise 2 to 6 inches during pre-loading. Attach guying cables, turnbuckles and hose, and secure until tree is rigidly guyed. On all guys, 1/3 distance up from ground to trunk, secure white plastic flagging 1" wide x 18", tied securely
 - a. Trees 3" in caliper or greater shall be guyed using the 120 degree, three-guy method, or as shown on the Drawings.
 - b. Trees less than 3" in caliper shall be staked using the 180 degree, two-stake method.
 - c. Maintain supports in place during entire guarantee period.
 2. Wrap trunks of deciduous trees of 1-1/2" or more caliper with a spiral overlapping wrapping to minimum height of third branch. Wrap from bottom and tie-wrapping securely in place. Remove wrapping at end of guarantee period.
 3. Prune plants only at time of planting and according to standard horticultural practice to preserve the natural character of the plant. Pruning to be done under supervision of the Project Architect. Pruning and trimming shall include the following:
 - a. Remove dead wood, suckers, and broken or badly bruised branches. Contractor shall not cut main leader of tree. Required shrub sizes are the sizes after pruning.
 - b. Use only clean sharp tools.
 - c. Paint cuts over 3/4" diameter, covering all exposed, living tissue.

3.05 MAINTENANCE OF TREES AND SHRUBS

- A. Maintenance shall begin immediately after each plant is planted and shall continue until acceptance of the project by the Owner after final inspection or 60 days, whichever is longer.
- B. Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, tightening and repairing guys, resetting plants to proper grades or upright position, restoration of the planting saucer, and furnishing and applying such sprays or other items as are necessary to keep the planting free of insects and disease and in thriving condition.
- C. Planting areas and plants shall be protected against trespassing and damage for the duration of the maintenance period. If plants become damaged or injured, they shall be treated or replaced as directed by the Architect at no additional cost to the Owner.
- D. Provide equipment and means for proper application of water to those planted areas not equipped with an irrigation system.
- E. Restoration: Pavements, sodded and planted areas, structures and substructures not specifically provided for in the contract, disturbed by the Contractor during the execution of the work shall be restored by the Contractor, in a manner satisfactory to the Owner's Representative, to their original condition at no cost to the Owner.

3.06 INSPECTION

- A. In Addition to Normal Progress Inspection, Schedule and Conduct the Following Formal Inspections, Giving the Architect at Least 3 Working Days Prior Notice of Readiness for Inspection:
1. Inspection of plants in containers prior to planting.
 2. Inspection of plant locations to verify compliance with the Drawings.
 3. Schedule the final inspection sufficiently in advance and in cooperation with the Architect so that the final inspection may be conducted within 24 hours after completion of planting.
 4. Provisional inspection will be at the end of the maintenance period, provided that previous deficiencies have been corrected.

3.07 PROVISIONAL ACCEPTANCE

- A. The Architect will inspect the work for provisional acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date of inspection.
1. Acceptance of plant material by the Architect shall be for general conformance to specified size, character, and quality and shall not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.
 2. Upon completion and reinspection of repairs or renewals necessary in the judgement of the Architect, he will certify in writing to the Contractor as to the acceptance of the work.
 3. At the issuance of provisional acceptance, the Owner will take over maintenance of the planting, the guarantee of plant material shall remain the responsibility of the Contractor. The Contractor shall ascertain that the Owner properly waters and maintains planting during the one-year guarantee period. The Contractor shall make inspection of plant materials during this period at intervals of not over 30 days during growing season. Contractor shall report in writing to Owner's Representative any deficiencies as identified or change in maintenance as needed. Report within ten days after inspection. The Contractor shall furnish written instructions for maintenance of the plantings to the Owner at the time of provisional acceptance.
- B. Acceptance in Part: The work may be accepted in parts when it is deemed to be in the Owner's best interest to do so and when approval is given to the Contractor in writing to complete work in parts. Acceptance and use of such areas by the Owner shall not waive any other provisions of this Contract.

3.08 GUARANTEE PERIOD AND REPLACEMENTS

- A. The guarantee period for trees and shrubs shall begin at the date of Provisional Acceptance.
- B. Plant material shall be guaranteed by the Contractor for a period of one year from the date of Provisional Acceptance to be in good, healthy and flourishing condition.
- C. When work is accepted in parts, the guarantee periods extend from each of the partial acceptances to the terminal date of the last guarantee period. Thus, all guarantee periods terminate at one time.
- D. The Contractor shall replace, without cost to the Owner and as soon as possible, as weather conditions permit and within a specified planting period, dead plants and plants not in a vigorous thriving condition, as determined by the Architect during and at the end of the guarantee period. Plants shall be free of dead or dying branches and branch tips and shall bear foliage of a normal density, size and color. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to the requirements stated in this Specification. Replacements required because of vandalism or other causes beyond control of the Contractor are not part of the Contract.
- E. The guarantee of replacement plants shall extend for an additional period of one year from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended guarantee period, the Owner may elect subsequent replacement or credit for each item.

- F. The Contractor shall make periodic inspection at no extra cost to the Owner during the guarantee period to determine what changes, if any, should be made to the Owner's maintenance program. Submit in writing to the Architect recommended changes.

3.09 CARE OF EXISTING TREES

- A. Upon completion of the work under this Section, existing trees within the work limits, unless indicated otherwise, shall be pruned and injuries repaired. The amount of pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of construction operations. Roots greater than 2" shall be hand-cut to provide clean, concise, cutting and removal. Pruning shall be done in such a manner as not to change the natural habit or shape of the plant. Cuts shall be made flush, leaving no stubs. On cuts over 3/4" diameter and bruises or scars on the bark, the injured cambium shall be traced back to living tissue and removed; wounds shall be smoothed and shaped so as not to retain water, and the treated area shall be coated with an approved tree paint.

3.10 CLEAN-UP

- A. When of this work is done while buildings are occupied, pavements shall be kept clear, broom cleaned to prevent tracking dirt into buildings.
- B. After completion of planting operations, dispose of debris and excess material to the satisfaction of the Architect. Pavements shall be broomed and hosed clean.

3.11 FINAL INSPECTION AND ACCEPTANCE

- A. At the end of the guarantee period, the Architect will inspect guaranteed work for final acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date for final inspection.
- B. Upon completion and reinspection of repairs or renewals necessary in the judgement of the Architect at that time, the Architect will certify in writing to the Contractor as to the final acceptance of the Planting.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

SEC. ADDENDUM # 1

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Concrete trench patching.
- B. Concrete slabs.
- C. Exterior concrete walks.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II.
- B. Concrete Aggregates: Shall conform to the requirements of ASTM C-33.
 - 1. Fine Aggregate: Sand shall consist of hard, tough and preferably siliceous material, clean, free from mineral or other coatings, soft particles, clay, loam or other deleterious matter.
 - 2. Coarse Aggregate: Crushed stone or gravel, having clean, hard, durable, uncoated particles, free from deleterious matter.
- C. Water: Potable.
- D. Reinforcing Materials:
 - 1. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
 - 2. Steel Wire: ASTM A 82, plain, cold-drawn steel.
 - 3. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
 - 4. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place.
- E. Interior Sealer (Utility Building): Ashford Formula manufactured by Curecrete Chemical Company.

2.02 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301.
- B. Design Mixes to Provide Normal Weight Concrete with the Following Properties :
 - 1. Interior: 3000-psi, 28-day compressive strength; 5-1/4 inch maximum slump; 3/4 or 3/8 inch coarse aggregate.
 - 2. Exterior Slabs, Pads, and Walks: 4000-psi, 28-day compressive strength; 5-1/4 inch maximum slump, water-cement ratio, 0.45 maximum, air-entrained, minimum 3/4 inch (19 mm) coarse aggregate.

PART 3 - EXECUTION

3.01 CAST CONCRETE

- A. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, recesses, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.
- B. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified. Accurately position, support, and secure reinforcement against displacement. Place reinforcement to maintain minimum coverages as indicated for concrete protection.
- C. Placing Concrete: Deposit and consolidate concrete in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
 - 1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
 - 2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats and straightedge to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations. Float and finish interior flatwork to a smooth steel trowel finish.
 - 3. Maintain reinforcing in proper position on chairs during concrete placement.
 - 4. Cure concrete by covering and keeping moist for 7 days.
- D. Placing Exterior Flatwork: Place concrete, screed and wood float surfaces to a smooth and uniform finish, free of open texturing and exposed aggregate. Avoid working mortar to surface.
 - 1. Bull float directly behind screed before bleedwater appears.
 - 2. Immediately behind bullfloat, drag broom across surface for a medium broom finish. If bleedwater appears before application of broom finish, allow surface water to evaporate before brooming.
- E. Cure concrete flatwork with waterproof curing paper placed over slab that has been misted with water. Seal all joints and properly, weight down and maintain in intimate contact with the slab for the duration of the 7 day curing period.
- F. Interior Sealer (Concession Building): Allow concrete to cure 28 days minimum. Apply sealer compound to interior concrete floors left exposed and sealed. Allow concrete to cure 4 days minimum after removal of curing method. Apply sealer compound to interior concrete floors left exposed and sealed before dirtied by construction operations.
 - 1. Surface shall be dry and clean, free of dirt, dust, and stains. Clean and dry slab that has become dirty using mechanical scrubbers.
 - 2. Keep the entire surface wet for 30 minutes by brooming excess product onto the dry spots or re-spraying the dry spots immediately.
 - 3. As the product begins to dry into the surface and becomes slippery underfoot, lightly sprinkle the surface with water to aid penetration and to bring alkali to the surface.
 - 4. As the product again begins to dry into the surface and becomes slippery underfoot, flush the surface with water and squeegee the surface totally dry, removing all excess product and alkali or other impurities brought to the surface.

END OF SECTION

SECTION 04200

UNIT MASONRY

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Brick unit masonry.
- B. Reinforced concrete unit masonry.
- C. Dampproofing block back-up.
- D. Cutting and patching.
- E. Masonry waste disposal.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

- A. Section 05500 - Metal Fabrications: Steel lintels for unit masonry. Metal fabrication anchors. Anchor bolts, plates and inserts.

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Product Data: For masonry units, accessories, cleaners, and other manufactured product specified.
- C. Shop Drawings: For reinforcing detailing fabrication, bending, and placement of unit masonry reinforcing bars. Elevate all concrete masonry walls and partitions.
- D. Mix Design: Grout.
- E. Provide sample color for each pre-colored block color.
- F. Submit two split face block samples with graffiti control sealer applied to rough and smooth side of block. Obtain approval before application to Utility Building.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.
- B. Single-Source Responsibility for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one source and by a single manufacturer for each different product required.
- C. Single-Source Responsibility for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store masonry units on elevated platforms, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not install until they are in an air-dried condition.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.06 PROJECT CONDITIONS

- A. Protection of Masonry: During erection, cover tops of walls, projections, and sills with waterproof sheeting at end of each days work. Cover partially completed masonry when construction is not in progress.
- B. Do not apply loads for at least 3 days after building masonry walls.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and mortar splatter by coverings spread on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt on completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit masonry damaged by frost or freezing conditions. Comply with the following requirements:
 - 1. Cold-Weather Construction: When the ambient temperature is within the limits indicated, use the following procedures:
 - a. 40 to 32°F (4 to 0°C): Heat mixing water or sand to produce mortar temperatures between 40 and 120°F (4 and 49°C).
 - b. 32 to 25° F (0 to -4°C): Heat mixing water and sand to produce mortar temperatures between 40 and 120°F (4 and 49°C). Heat grout materials to produce grout temperatures between 40 and 120° F (4 and 49°C). Maintain mortar and grout above freezing until used in masonry.
 - c. 25 to 20°F (-4 to -7°C): Heat mixing water and sand to produce mortar temperatures between 40 and 120°F (4 and 49°C). Heat grout materials to produce grout temperatures between 40 and 120°F (4 and 49°C). Maintain mortar and grout above freezing until used in masonry. Heat masonry units to 40°F (4°C) if grouting. Use heat on both sides of walls under construction.
 - d. 20°F (-7°C) and Below: Heat mixing water and sand to produce mortar temperatures between 40 and 120°F (4 and 49°C). Heat grout materials to produce grout temperatures between 40 and 120° F (4 and 49°C). Maintain mortar and grout above freezing until used in masonry. Heat masonry units to 40°F (4°C). Provide enclosures and use heat on both sides of walls under construction to maintain temperatures above 32°F (0°C) within the enclosures.
 - 2. Cold-Weather Protection: When the mean daily temperature is within the limits indicated, provide the following protection, this is in addition to construction procedures specified above:
 - a. 40 to 25°F (4 to -4°C): Cover masonry insulating blankets for 48 hours after construction.

- b. 25°F (-4°C) and Below: Provide enclosure and heat to maintain temperatures above 32°F (0°C) within the enclosure for 72 hours after construction.
 - 3. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40°F (4°C) and above and will remain so until masonry has dried out, but not less than 7 days after completion of cleaning.
- E. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100°F (38°C) and above.

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. General: ASTM C 90-96, Type I, normal weight.
 - 1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
 - 2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
 - 3. Provide bullnose units for outside corners and jambs at interior walls, unless otherwise indicated.
 - 4. Provide smooth and split face units with integral coloring for utility building. Furnish with water-repellant admixture.
- B. Concrete Building Brick: ASTM C 55, Grade S.

2.02 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.
- B. Blue Circle pre-blended cement and lime mix is acceptable. Standard masonry cement is not acceptable.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Mortar Pigments: SGS Mortar Colors; Solomon Grind-Chem Services, Inc.
- E. Water-Repellent Admixture: Dry-Block Mortar Admixture; Grace: W.R. Grace.
- F. Aggregate for Mortar: ASTM C 144.
- G. Aggregate for Grout: ASTM C 404.
- H. Water: Potable.

2.03 REINFORCING STEEL

- A. Steel Reinforcing Bars: Material and grade as follows:
 - 1. Billet steel complying with ASTM A 615 (ASTM A 615M).
 - 2. Epoxy-coated billet steel complying with ASTM A 615 (ASTM A 615M) and ASTM A 775 (ASTM A 775M).
 - a. Grade 60 (Grade 400).
- B. Deformed Reinforcing Wire: ASTM A 496, with ASTM A 153, Class B-2 zinc coating.

2.04 JOINT REINFORCEMENT

- A. Interior Block Walls: ASTM A 82, Continuous ladder type, 9 gage, ASTM A 641 mill galvanized.
 - 1. D/A Ladur; Dur-O-Wal, Inc.
 - 2. No. 1100 Ladder; Heckman Building Products, Inc.
 - 3. Lox-All Ladder-Mesh; Hohmann & Barnard, Inc.
 - 4. Ladder Series 200; Wire Bond
- B. Exterior Block Walls: Continuous ladder type with 3/16" side rods and 9 gage cross rods, ASTM A 153, Class B-2, continuous ladder type.
 - 1. D/A Ladur; Dur-O-Wal, Inc.

2.05 RIGID ANCHORS

- A. General: Fabricate flat bar anchors from steel bars as follows:
 - 1. 2 inches (50 mm) wide by 1/4 inch (6.4 mm) thick by 24 inches (600 mm) long, with ends turned up 2 inches (50 mm) or with cross pins.
 - 2. As indicated.

2.06 MISCELLANEOUS ANCHORS

- A. Postinstalled Anchors: Anchors as described below, with capability to sustain, without failure, load imposed within factors of safety indicated, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Type: Chemical anchors.
 - 2. Type: Expansion anchors.
 - 3. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (5 microns) for Class SC 1 service condition (mild).
 - 4. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Alloy Group 1 or 4) for bolts and nuts; ASTM A 167 or ASTM A 276, Type 304 or 316, for anchors.

2.07 EMBEDDED FLASHING MATERIALS

- A. Laminated (Fabric) Flashing: Copper-Fabric Laminate, 5 oz. copper sheet, bonded with asphalt between 2 layers of glass-fiber cloth.
 - 1. Copper Fabric; AFCO Products, Inc.
 - 2. Copper Fabric Flashing; Sandell Manufacturing Co., Inc.
 - 3. York Copper Fabric Flashing; York Manufacturing, Inc.
 - 4. Application: Use where flashing is fully concealed in masonry.
- B. Adhesive for Flashing: Of type recommended by manufacturer of flashing material for use indicated.

2.08 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Type 2, Class A, Grade 1.
- B. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I, No. 15 asphalt felt.

2.09 MASONRY CLEANERS AND SEALERS

- A. Job-Mixed Detergent Solution: Solution of 1/2 cup (0.14 L) dry measure tetrasodium polyphosphate (Spic and Span) and 1/2 cup (0.14 L) dry measure laundry detergent dissolved in 1 gal.(4 L) of water.
- B. Masonry Cleaning Compound: Sure Klean Vana Trol.

- C. Anti-Graffiti Coating: ProSoCo, Inc., Graffiti Control WB.

2.10 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
- B. Mortar for Unit Masonry: Comply with BIA M1, Proportion Specification, for types of mortar indicated below:
 - 1. Limit cementitious materials in mortar to portland cement and lime.
 - 2. Type S: For reinforced masonry; for exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for brick veneer; for interior load-bearing walls; for interior nonload-bearing partitions, and for other applications where another type is not indicated.
- C. Pigmented Mortar: Select and proportion pigments with other ingredients to produce color required.
 - 1. Limit Pigments to the Following Percentages of Cement Content by Weight: For mineral oxide pigments and portland cement-lime mortar, not more than 10 percent.
 - 2. Provide pigmented mortar for decorative block units.
- D. Water-Repellent Admixture: Use water-repellent admixture in mortar for masonry block containing water-repellent admixture.
 - 1. Add water-repellent admixture to mortar at the rate required by the admixture manufacturer.
- E. Grout for Unit Masonry: Comply with ASTM C 476. 3000 psi, 28-day compressive strength. Use grout of consistency indicated or, if not otherwise indicated, of consistency (fine or coarse) at time of placement that will completely fill spaces intended to receive grout.
 - 1. Use fine grout in grout spaces less than 2 inches (50 mm) in horizontal dimension, unless otherwise indicated.
 - 2. Use coarse grout in grout spaces 2 inches (50 mm) or more in least horizontal dimension, unless otherwise indicated.
- F. Concrete for Unit Masonry: 3000 psi, 28-day compressive strength. Comply with requirements of Section 03300.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of unit masonry. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.

3.02 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of thickness indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections of the Specifications.

- C. Leave openings for equipment to be installed before completion of masonry. After installing equipment, complete masonry to match construction immediately adjacent to the opening.
- D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting, where possible. Allow units cut with water-cooled saws to dry before placing. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

3.03 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces of columns, walls, and arises, do not exceed 1/4 inch in 10 feet (6 mm in 3 m), nor 3/8 inch in 20 feet (10 mm in 6 m), nor 1/2 inch in 40 feet (12 mm in 12 m) or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m), nor 1/2 inch in 40 feet (12 mm in 12 m) or more. For vertical alignment of head joints, do not exceed plus or minus 1/4 inch in 10 feet (6 mm in 3 m), nor 1/2 inch (12 mm) maximum.
- B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m), nor 1/2 inch in 40 feet (12 mm in 12 m) or more. For top surface of bearing walls, do not exceed 1/8 inch (3 mm) in 10 feet (3 m), nor 1/16 inch (1.5 mm) within width of a single unit.
- C. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls, and partitions, do not exceed 1/2 inch in 20 feet (12 mm in 6 m), nor 3/4 inch in 40 feet (19 mm in 12 m) or more.
- D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus 1/4 inch (6 mm) nor plus 1/2 inch (12 mm).
- E. Variation in Mortar-Joint Thickness: Do not vary from bed-joint thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm). Do not vary bed-joint thickness from bed-joint thickness of adjacent course by more than 1/8 inch (3 mm). Do not vary from head-joint thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary head-joint thickness from adjacent head-joint thickness by more than 1/8 inch (3 mm). Do not vary from collar-joint thickness indicated by more than minus 1/4 inch (6 mm) or plus 3/8 inch (10 mm).

3.04 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.
- B. Lay walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.
- C. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
 - 1. One-half running bond with vertical joint in each course centered on units in courses above and below.
- D. Stopping and Resuming Work: In each course, rack back 1/2-unit length for one-half running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar prior to laying fresh masonry.

- E. Built-in Work: As construction progresses, build-in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items. Fill space between hollow metal and bent plate frames and masonry solidly with mortar, unless otherwise indicated. Grout cores solid minimum of 16 inches each side of openings.
- F. Fill space between hollow metal and bent plate frames and masonry solidly with mortar, unless otherwise indicated. Grout cores solid minimum of 16 inches each side of openings.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
- H. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- I. Build Nonload-bearing Interior Partitions Full Height of Story to Underside of Solid Floor or Roof Structure above and as Follows: Install compressible filler in joint between top of partition and underside of structure above.

3.05 MORTAR BEDDING AND JOINTING

- A. Lay Hollow Concrete Masonry Units as Follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
 - 3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells. Fill starting course where cells are not grouted with mortar to direct water into flashed and weeped locations.
 - 4. Maintain joint widths indicated, except for minor variations required to maintain bond alignment. If not indicated, lay walls with 3/8-inch (10-mm) joints.
- B. Lay masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not furrow bed joints or slush head joints.
 - 1. At cavity walls, slope beds toward cavity to minimize mortar protrusions into cavity. As work progresses, trowel mortar fins protruding into cavity flat against cavity face of brick. Utilize drag boards.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
- D. Cut joints flush for masonry walls that are to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

3.06 HORIZONTAL-JOINT REINFORCEMENT

- A. General: Provide continuous horizontal-joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcing a minimum of 6 inches (150 mm).
 - 1. Space reinforcement not more than 16 inches (406 mm) o.c.
 - 2. Provide reinforcement in mortar joint 1 block course above and below wall openings and extending 12 inches (305 mm) beyond opening.
 - a. Reinforcement above is in addition to continuous reinforcement.
- B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

- C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.07 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joints in unit masonry where indicated. Build-in related items as the masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
- B. Form Control Joints in Concrete Masonry as Follows: Fit bond-breaker strips into hollow contour in ends of block units on one side of control joint. Fill the resultant core with grout and rake joints in exposed faces.
- C. Form Expansion Joints in Brick Made from Clay or Shale as Follows: Form open joint of width indicated, but not less than 3/8 inch (10 mm) or more than 5/8 inch (16mm) for installation of sealant and backer rod specified in Section 07900 - "Joint Sealants." Maintain joint free and clear of mortar.

3.08 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and where openings of more than 12 inches (305 mm) for brick size units and 24 inches (610 mm) for block size units are shown without structural steel or other supporting lintels.
- C. Provide minimum bearing of 8 inches (200 mm) at each jamb, unless otherwise indicated.

3.09 FLASHING, WEEP HOLES, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to the downward flow of water in the wall, and where indicated.
- B. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with asphalt mastic as recommended by flashing manufacturer before covering with mortar.
- C. Install Flashing as Follows:
1. At composite masonry walls, including cavity walls, extend metal flashing from exterior face of outer wythe of masonry, through the outer wythe, turned up a minimum of 8 inches (200 mm) against the back-up. Provide fabric counter flashing overlapping vertical leg and ends of metal flashing 6 inches and turning into inner wythe mortar joint 1 inch.
 2. At lintels, shelf angles, and bearing plates, extend metal flashing a minimum of 8 inches (200 mm) into masonry at ends and turn up not less than 2 inches (50 mm) to form a pan, with inside corners soldered. Metal flashing shall be one piece, full width of opening. Where opening width exceeds available sheet metal length, overlap and solder to make single continuous piece.
 3. Lap end joints of fabric flashing 8 inches (200 mm), sealing horizontal and vertical contact surfaces in full bed of asphalt mastic.
 4. Extend metal flashing 3/8 inch (9 mm) beyond face of masonry at exterior and turn down 45 degrees to form a drip. Lap joints of metal flashing 3 inches, sealing between with full bed of asphalt mastic. Over the top of each joint, apply a 4 inch wide strip of rubberized asphalt sheet flashing to both the horizontal and vertical legs.
- D. Install Weep Holes in the Head Joints in Exterior Wythes of the First Course of Masonry Immediately above Embedded Flashing and as Follows:
1. Form weep holes with product specified in Part 2 of this Section, spaced 32 inches o.c.

3.10 INSTALLATION OF REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
1. Construct formwork to conform to shape, line, and dimensions shown. Make sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Bracing of Walls During Construction: Provide temporary lateral bracing of masonry walls to prevent collapse in accordance with NCMA-TEC 72 and applicable OSHA standards. Contractor is solely responsible for the design and adequacy of bracing methods used.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
1. Do Not Exceed the Following Pour Heights for Fine Grout:
 - a. For minimum widths of grout spaces of 3/4 inch (19 mm) or for minimum grout space of hollow unit cells of 1 1/2 by 2 inches (38 by 51 mm), pour height of 12 inches (305 mm).
 - b. For minimum widths of grout spaces of 2 inches (51 mm) or for minimum grout space of hollow unit cells of 2 by 3 inches (51 by 76 mm), pour height of 60 inches (1524 mm).
 - c. For minimum widths of grout spaces of 2-1/2 inches (63 mm) or for minimum grout space of hollow unit cells of 2-1/2 by 3 inches (63 by 76 mm), pour height of 12 feet (3.6 m).
 - d. For minimum widths of grout spaces of 3 inches (76 mm) or for minimum grout space of hollow unit cells of 3 by 3 inches (76 by 76 mm), pour height of 24 feet (7.3 m).
 2. Do Not Exceed the Following Pour Heights for Coarse Grout:
 - a. For minimum widths of grout spaces of 1-1/2 inches (38 mm) or for minimum grout space of hollow unit cells of 1-1/2 by 3 inches (38 by 76 mm), pour height of 12 inches (305 mm).
 - b. For minimum widths of grout spaces of 2 inches (51 mm) or for minimum grout space of hollow unit cells of 2-1/2 by 3 inches (63 by 76 mm), pour height of 60 inches (1524 mm).
 - c. For minimum widths of grout spaces of 2-1/2 inches (63 mm) or for minimum grout space of hollow unit cells of 3 by 3 inches (76 by 76 mm), pour height of 12 feet (3.6 m).
 - d. For minimum widths of grout spaces of 3 inches (76 mm) or for minimum grout space of hollow unit cells of 3 by 4 inches (76 by 101 mm), pour height of 24 feet (7.3 m).
 3. Provide cleanout holes at least 3 inches (76 mm) in least dimension for grout pours over 60 inches (1524 mm) in height.
 - a. Provide cleanout holes at each vertical reinforcing bar.
 - b. At solid grouted masonry, provide cleanout holes at not more than 32 inches (813 mm) o.c.
 4. Interior of block cells shall be dry before grouting operations occur to facilitate proper absorption of water from grout. Wet or saturated surface dry conditions are not allowed, and shall be allowed to fully dry before grout placement.
 5. Vibrate grout a few minutes after placement with 3/4 inch diameter vibrator head. Insert vibrator 2/3 or more of the way into the pour, constantly moving without holding still in one location. Fill void left by settlement.

3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units; install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point-up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for application of sealants.

- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears prior to tooling joints.
- D. Final Cleaning: After Mortar Is Thoroughly Set and Cured, Clean Exposed Masonry as Follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 4. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
 5. Clean brick by bucket and brush hand-cleaning method described in BIA Technical Note No.20 Revised, and manufacturer's printed instructions using the following masonry cleaner:
 - a. Job-mixed detergent solution to remove dirt and soil from standard block to be painted.
 - b. Masonry cleaning compound to clean brick. Allow mortar to cure minimum 14 days before cleaning.
- E. Sealer: Apply anti-graffiti coating to exterior of masonry block at the Concession Building in accordance with manufacturer's written instructions.
- F. Protection: Provide final protection and maintain conditions that ensure unit masonry is without damage and deterioration at time of Substantial Completion.
- 3.12 MASONRY WASTE DISPOSAL
- A. Recycling: Undamaged, excess masonry materials are Contractor's property and shall be removed from the Project site for his use.
- B. Excess Masonry Waste: Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste and legally dispose of off Owner's property.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Loose steel lintels.

PART 2 - PRODUCTS

2.01 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.02 PAINT

- A. Shop Primer for Ferrous Metal: Fast-curing, lead and chromate-free, universal modified-alkyd primer complying with performance requirements of FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.
- B. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.

2.03 FASTENERS

- A. General: Provide plated fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating, for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568, Property Class 4.6), with hex nuts, ASTM A 563 (ASTM A 563M), and, where indicated, flat washers.
- C. Machine Screws: ANSI B18.6.3.
- D. Lag Bolts: ANSI B18.2.1 (ANSI B18.2.3.8M).
- E. Wood Screws: Flat head, carbon steel, ANSI B18.6.1.
- F. Plain Washers: Round, carbon steel, ANSI B18.22.1 (ANSI B18.22M).
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
 - 1. Material: Carbon steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material: Group 1 alloy 304 or 316 stainless-steel bolts and nuts complying with ASTM F 593 (ASTM F 738M) and ASTM F 594 (ASTM F 836M).
- H. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as required.

- I. Chemical Anchors: Two-part epoxy systems with impacted bolt, rod or anchor as follows:
 1. Concrete anchor: Epoxy capsule system similar to Hilti HVA Adhesive Anchor System, Ramset Chemset anchor system, or approved equal.
 2. Masonry anchors: Epoxy injection system similar to Hilti HIT C-100 System.

2.04 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

2.05 LOOSE STEEL LINTELS

- A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Weld adjoining members together to form a single unit where indicated.
- C. Size loose lintels for equal bearing of 1 inch per foot (85 mm per meter) of clear span but not less than 8 inches (200 mm) bearing at each side of openings, unless otherwise indicated.
- D. Galvanize loose steel lintels located in exterior walls.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports for applications indicated to complete the Work.
- B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

2.07 STEEL AND IRON FINISHES

- A. Galvanizing: For those items indicated for galvanizing, apply zinc coating by the hot-dip process complying with the following requirements:
 1. ASTM A 153 for galvanizing iron and steel hardware.
 2. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch (0.76 mm) thick or thicker.
- B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 1. Interiors (SSPC Zone 1A): SSPC-SP 3 "Power Tool Cleaning."
- C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes, unless otherwise indicated. Comply with requirements of SSPC-PA 1 "Paint Application Specification No. 1" for shop painting.
 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.08 MISCELLANEOUS FABRICATIONS

- A. Countertop Supports: Fabricate from steel angle with steel gussets to configuration indicated. Round edges and ends to remove sharp edges.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installing anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.02 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Framing with dimension lumber.
- B. Wood nailers and blocking.
- C. Wood furring.
- D. Sheathing.

1.02 RELATED SECTIONS

- A. Section 06200 - Finish Carpentry: Nonstructural carpentry items exposed to view and not specified in another Section.

1.03 REFERENCES

- A. ANSI A 208.1 - Wood Particleboard.
- B. ALSC (American Lumber Standards Committee) - Softwood Lumber Standards.
- C. ASTM A153-82 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. ASTM D2559-84 - Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions; 1984.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. APA (American Plywood Association).
- G. AWWA (American Wood Preservers Association) C1 - All Timber Products - Preservative Treatment by Pressure Process.
- H. NELMA (New England Lumber Manufacturer's Association).
- I. PS 1 - Construction and Industrial plywood.
- J. SPIB (Southern Pine Inspection Bureau).
- K. WCLIB (West Coast Lumber Inspection Bureau).
- L. WWPA (Western Wood Products Association).

1.04 DEFINITIONS

- A. Rough carpentry includes carpentry work not specified as part of other Sections and generally not exposed, unless otherwise specified.

1.05 QUALITY ASSURANCE

- A. Single-Source Responsibility for Engineered Wood Products: Obtain each type of engineered wood products from one source from a single manufacturer.
- B. Single-Source Responsibility for Fire Retardant Treated Wood: Obtain each type of fire-retardant-treated wood products from one source for both treatment and fire-retardant formulation.
- C. Testing Laboratory Qualifications: To qualify for acceptance, an independent testing laboratory must demonstrate to Architect's satisfaction, based on evaluation of laboratory-submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct satisfactorily the testing indicated without delaying the progress of the Work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.

PART 2 - PRODUCTS

2.01 LUMBER, GENERAL

- A. Lumber Standards: Furnish lumber manufactured to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
- B. Inspection Agencies: Inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:
 - 1. NELMA - Northeastern Lumber Manufacturers Association.
 - 2. NLGA - National Lumber Grades Authority (Canadian).
 - 3. SPIB - Southern Pine Inspection Bureau.
 - 4. WCLIB - West Coast Lumber Inspection Bureau.
 - 5. WWPA - Western Wood Products Association.
- C. Grade Stamps: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
 - 1. For exposed lumber furnish pieces with grade stamps applied to ends or back of each piece; or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.
- D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
 - 1. Provide dressed lumber, S4S, unless otherwise indicated.
 - 2. Provide seasoned lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.

2.02 DIMENSION LUMBER

- A. For Light Framing (2 to 4 Inches Thick, all widths), Provide the Following Grade and Species: SPF No. 2 grade and better or No. 2 grade, Hem-Fir, per WWPA rules..

2.03 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, strapping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture content: 15 percent maximum for lumber items not specified to receive wood preservative treatment.
- D. Grade: "Standard" grade light-framing-size lumber of any species or board-size lumber as required. "No. 3 Common" or "Standard" grade boards per WCLIB or WWPA rules or "No. 2 Boards" per SPIB rules.

2.04 CONSTRUCTION PANELS, GENERAL

- A. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108.
- B. Trademark: Furnish construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.

2.05 CONCEALED PERFORMANCE-RATED CONSTRUCTION PANELS

- A. General: Where construction panels are indicated for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements designated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness.
- B. Wall Sheathing: APA RATED SHEATHING.
 - 1. 5/8" unless indicated otherwise, CDX fir plywood.
- C. Roof Sheathing: APA RATED SHEATHING.
 - 1. 5/8" unless indicated otherwise, CDX fir plywood.
- D. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant-treated plywood panels with grade designation, APA C-D PLUGGED EXPOSURE 1, in thickness indicated, or, if not otherwise indicated, not less than 15/32 inch.

2.06 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.
- B. Nails, Wire, Brads, and Staples: FS FF-N-105.
- C. Power Driven Fasteners: National Evaluation Report NER-272.
- D. Wood Screws: ANSI B18.6.1.
- E. Lag Bolts: ANSI B18.2.1.

- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

2.07 METAL FRAMING ANCHORS

- A. General: Provide metal framing anchors of type, size, metal, and finish indicated that comply with requirements specified including the following:
1. Current Evaluation/Research Reports: Provide products for which model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with the building code in effect for this Project.
 2. Allowable Design Loads: Provide products for which manufacturer publishes allowable design loads that are determined from empirical data or by rational engineering analysis and that are demonstrated by comprehensive testing performed by a qualified independent testing laboratory.
- B. Galvanized Steel Sheet: Steel sheet zinc-coated by hot-dip process on continuous lines prior to fabrication to comply with ASTM A 525 for Coating Designation G60 and with ASTM A 446, Grade A (structural quality); ASTM A 526 (commercial quality); or ASTM A 527 (lock-forming quality); as standard with manufacturer for type of anchor indicated.
1. Use galvanized steel framing anchors for rough carpentry exposed to weather, in ground contact, or in area of high relative humidity, and where indicated.

2.08 PRESERVATIVE WOOD TREATMENT BY PRESSURE PROCESS

- A. General: Where lumber or plywood is indicated as preservative-treated wood or is specified herein to be treated, comply with applicable requirements of AWWPA Standards C2 (Lumber) and C9 (Plywood). Mark each treated item with the AWPB or SPIB Quality Mark Requirements.
- B. Pressure-treat above-ground items with water-borne preservatives to a minimum retention of 0.40 pcf. For interior uses, after treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of 19 percent and 15 percent. Treat indicated items and the following:
1. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry construction and that are too small to use in fabricating rough carpentry with minimum joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb and true to line and cut and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated.
- E. Countersink nail heads on exposed carpentry work and fill holes.
- F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

3.02 WOOD NAILERS, BLOCKING, AND SLEEPERS

- A. Install wood nailers, blocking, and sleepers where shown and where required for screeding or attachment of other work. Install wood blocking, nailers, sleepers to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, casework, furnishings, or similar construction. Provide 3/4 inch thick plywood covering a minimum of 32 inches square for toilet accessories. Provide 1-1/2 inch thick blocking minimum, for grab bars and handrail supports. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
- B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

3.03 WOOD FRAMING, GENERAL

- A. Framing Standard: Comply with N.F.P.A. "Manual for Wood Frame Construction," unless otherwise indicated.
- B. Install framing members of size and spacing indicated.
- C. Anchor and nail as shown, and to comply with the following:
 - 1. National Evaluation Report No. NER-272 for pneumatic or mechanical driven staples, P-Nails, and allied fasteners.
 - 2. Published requirements of manufacturer of metal framing anchors.
 - 3. "Table No. II - Recommended Nailing Schedule" of the Uniform Building Code.
- D. Do not splice structural members between supports.

3.04 RAFTER AND CEILING JOIST FRAMING

- A. Ceiling Joists: Install ceiling joists with crown up and to comply with requirements specified above for floor joists. Face nail to ends of parallel rafters.
 - 1. Where principal ceiling joists are at right angles to rafters, frame as indicated with additional short joists from wall plate to first joist; nail to ends of rafters and to top plate and nail to long joists or anchor with framing anchors or metal straps. Install 1 by 8 or 2 by 4 stringers spaced 4 feet o.c. crosswise over principal ceiling joists.
- B. Rafters: Notch to fit exterior wall plates and toe nail or use special metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing (if any), and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
 - 1. At valleys, install valley rafter of size shown, or if not shown, twice the thickness of regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against valley rafter.
- C. Install collar beams (ties) as shown, or if not shown, install 1-inch by 6-inch boards between every third pair of rafters. Locate below ridge member, one-third of distance to ceiling joists. Cut ends to fit slope and nail to rafters.
- D. Install special framing as shown for eaves, overhangs, and similar conditions, if any.

3.05 INSTALLATION OF CONSTRUCTION PANELS

- A. General: Comply with applicable recommendations contained in Form No. E30, "APA Design/Construction Guide - Residential & Commercial," for types of construction panels and applications indicated.

- B. Fastening Methods: Fasten panels as indicated below:
1. Sheathing: Nail to framing.
 2. Plywood Backing Panels: Nail to supports.

END OF SECTION

SECTION 06200

FINISH CARPENTRY

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Interior standing and running trim.
- B. Vinyl siding and soffit.
- C. Aluminum trim cladding.

1.02 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: Furring, blocking, and other carpentry work not exposed to view.

1.03 REFERENCES

- A. AHA A135.4 - Basic Hardboard; American Hardboard Association.
- B. ANSI A208.1 - Wood Particleboard.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- D. ANSI/BHMA A156.9 - Cabinet Hardware.
- E. AWI - Quality Standards
- F. AWI P-200 - Architectural Woodwork Quality Standards; Architectural Woodwork Institute.
- G. AWWA C2 - Lumber, Timbers, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes; American Wood Preservers Association.
- H. NEMA LD3 - High Pressure Decorative Laminate
- I. HPVA HP-1 - Voluntary Standard for Hardwood and Decorative Plywood; Hardwood Plywood Manufacturer's Association.
- J. NIST PS 1 - Construction and Industrial Plywood.
- K. NIST PS 20 - American Softwood Lumber Standard.
- L. PS 1 - Construction and Industrial plywood.
- M. PS 20 - American Softwood Lumber Standard.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Section 01300.
- B. Product Data: Submit each type of factory-fabricated product and process specified, including details of construction relative to materials, dimensions of individual components, profiles, textures, and colors.

- C. Samples: Submit for selection of the following units showing the full range of colors, textures, and patterns available for each type of material indicated.
 - 1. Vinyl siding.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed finish carpentry similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," for lumber and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee Board of Review.
- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
 - 1. NELMA - Northeastern Lumber Manufacturers Association.
 - 2. NLGA - National Lumber Grades Authority (Canadian).
 - 3. SPIB - Southern Pine Inspection Bureau.
 - 4. WCLIB - West Coast Lumber Inspection Bureau.
 - 5. WWPA - Western Wood Products Association.
- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
 - 1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.
- D. Softwood Plywood: Comply with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood."
- E. Hardwood Plywood: Comply with HPVA HP-1, "Interim Voluntary Standard for Hardwood and Decorative Plywood."
 - 1. 7 ply core, no voids. MDF core for cabinet doors.
 - a. Birch: Select white, plain sliced, book matched, Grade A for natural finish. Paint grade rotary birch for opaque finish.
- F. Exterior Gypsum Soffit Board (Ceiling at Utility Building): ASTM C931, with manufacturer's standard edges, of type and thickness indicated below:
 - 1. Type: Regular or Type X
 - 2. Thickness: 5/8 inch (15.9 mm), unless otherwise indicated.

2.02 EXTERIOR TRIM

- A. Lumber Trim: Provide finished lumber and moldings complying with the following requirements including those of the grading agency listed with species:
 - 1. Species: Eastern white pine; NELMA.
 - a. Grade: Select for exposed wood.
 - b. Grade behind coil stock: No. 4 and better

2.03 VINYL SIDING AND TRIM

- A. Vinyl Siding: Certainteed Monogram RigidForm 180, double 4 inch clapboard.
- B. Vinyl Soffit: Monogram Chamfer Board, double 5 inch panels, smooth brushed finish, perforated.
- C. Vinyl Accessories: Clor to match siding.
 - 1. Starter Strip: Aluminum.
 - 2. Perimeter trim: J-channel.
 - 3. Soffit trim: F and J-channel.
- D. Metal Trim: 0.019 inch thick aluminum coil stock.
 - 1. Fabricate for waterproof and weather-resistant performance, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated. Form shapes with metal break equipment, providing minimum of 8 foot lengths.
- E. Color: Color for vinyl and metal to be selected by Architect.

2.04 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide nails of the following materials, in sufficient length to penetrate minimum of 1-1/2 inches (38 mm) into substrate, unless otherwise recommended by manufacturer.
 - 1. Stainless steel.
 - 2. Hot-dip galvanized steel.
 - 3. Noncorroding aluminum.
 - 4. Prefinished aluminum nails in color to match stain, where face nailing of material to receive stain is unavoidable.
- B. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.
 - 1. Where finish carpentry materials are exposed in areas of high humidity, provide fasteners and anchorages with hot-dip galvanized coating complying with ASTM A 153.

2.05 FABRICATION

- A. Fabricate Finish carpentry items in strict accordance with AWI Quality Standards, Custom Grade.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting installation and performance of finish carpentry. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Condition finish carpentry to average prevailing humidity conditions in installation areas before installation, for a minimum of 24 hours unless longer conditioning is recommended by manufacturer.

3.03 INSTALLATION, GENERAL

- A. Do not use finish carpentry materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.
- B. Install finish carpentry plumb, level, true, and aligned with adjacent materials. Use concealed shims where required for alignment.
 - 1. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
 - 2. Countersink nails, fill surface flush, and sand where face nailing is unavoidable.
 - 3. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) for plumb and level. Install adjoining finish carpentry with 1/32 inch (0.8 mm) maximum offset for flush installation and 1/16 inch (1.5 mm) maximum offset for reveal installation.
 - 4. Coordinate finish carpentry with materials and systems in or adjacent to standing and running trim and rails. Provide cutouts for mechanical and electrical items that penetrate exposed surfaces of trim and rails.
- C. Install tackable wall panels in strict accordance with manufacturer's instructions. Adhere to wall and secure with concealed clips that are fastened through the wallboard to studs or blocking back-up.
- D. Finish according to specified requirements.
- E. Refer to Division 9 Sections for final finishing of finish carpentry.

3.04 STANDING AND RUNNING TRIM INSTALLATION

- A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches (610 mm) long, except where necessary. Stagger joints in adjacent and related standing and running trim. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane backs of casings to provide uniform thickness across joints, if required.
 - 1. Match color and grain pattern across joints.
 - 2. Install trim after gypsum board joint finishing operations are completed.
 - 3. Drill pilot holes in hardwood before fastening to prevent splitting. Fasten to prevent movement or warping. Countersink fastener heads on exposed carpentry work and fill holes.

3.05 SIDING INSTALLATION

- A. General: Install products in accordance with the latest printed instructions of the manufacturer, with all components true and plumb. Install panels plumb and level, with joints properly interlocked. Ends cut to follow angles at roof lines and similar conditions, shall be attached to backup, maintaining panel level and preventing bowing of panel.
- B. Install felt paper or building wrap behind vinyl siding, covering entire wall, lapping edges in shingle fashion to shed water.
- C. Joints in Horizontal Siding: Stagger lap joints in uniform pattern as successive courses of siding are installed. Conceal cut edges behind trim. Siding shall be installed full length without joints where runs do not exceed manufactured panel lengths.
- D. Where the siding terminates at dissimilar materials, provide J-trim. Set trim in continuous bead of sealant, concealed between trim and adjacent material. Miter intersecting corners of trim.
- E. Trim shall be one-piece without joints, except where lengths exceed manufactured lengths.

- F. Install metal trim with concealed fasteners, unless indicated otherwise. Metal shall be installed to resist wind blow-off and prevent flutter and vibration. Allow for expansion and contraction, making square, straight corners and tight overlaps, free of gaps and openings, properly sealed to be watertight.

3.06 ADJUSTING

- A. Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

3.07 CLEANING

- A. Clean finish carpentry on exposed and semiexposed surfaces.

3.08 PROTECTION

- A. Provide final protection and maintain conditions that ensure finish carpentry is without damage or deterioration at the time of Substantial Completion.

END OF SECTION



SECTION 07310

ASPHALT SHINGLES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Asphalt shingles and underlayments for steep roofs.

1.02 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: Wood sheathing and framing.

1.03 REFERENCES

- A. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- B. ASTM D228 - Testing Asphalt Roll Roofing, Cap Sheets and Shingles.
- C. ASTM D1970 - Self-Adhered Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- D. ASTM D3018 - Class A Asphalt Shingles Surfaced with Mineral Granules.
- E. ASTM D3019 - Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos Fibered, and Non-Asbestos Fibered.
- F. ASTM D3161 - Wind Resistance of Asphalt Shingles (Fan-Induced Method).
- G. ASTM D3462 - Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules.
- H. ASTM D4586 - Asphalt Roof Cement, Asbestos Free.
- I. ASTM D4869 - Asphalt Saturated Organic Felt Shingle Underlayment Used in Roofing.
- J. NRCA - Steep Roofing Manual.

1.04 SUBMITTALS

- A. General: Submit in accordance with Section 01300.
- B. Product Data: Submit for each type of product specified, including details of construction relative to materials, dimensions of individual components, profiles, textures, and colors.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's unopened bundles or containers with labels intact.
- B. Handle and store materials at Project site, covered with waterproof covering and protected to prevent water damage, staining, or other physical damage. Store roll goods on end. Do not stack bundles of shingles more than 4 ft. high. Comply with manufacturer's recommendations for job-site storage, handling, and protection.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide asphalt shingles produced by one of the following:
 - 1. CertainTeed Corporation. XT25.

2.02 ASPHALT SHINGLES

- A. Square-Tab, Fiberglass Strip Shingles: Mineral-surfaced, self-sealing, 3-tab, 5 inch exposure, fiberglass-based, strip asphalt shingles, complying with both ASTM D 3018, Type I, and ASTM D 3462. Fiber glass mat shall weigh not less than 2.2 lbs./100 sq. ft. Provide shingles with a Class A fire-test-response classification that pass the wind-resistance-test requirements of ASTM D 3161.
- B. Ridge Shingles: Job-fabricated units cut from actual asphalt shingles used.

2.03 METAL TRIM AND FLASHING

- A. Drip Edge: Lamb & Ritchie Company, Inc., Style 5D, prefinished aluminum.
- B. Stack Flashing: Pipes penetrating shingled roofs shall be ARFCO self-sealing neoprene collar with aluminum flange.

2.04 ACCESSORIES

- A. Felt Underlayment: Type I, 36 inch (914 mm) wide, asphalt-saturated organic felt, complying with ASTM D 226 (No. 15) or ASTM D 4869.
- B. Waterproof Underlayment: Minimum 40 mil (1 mm) thick, self-adhering, polymer-modified, bituminous sheet membrane, complying with ASTM D 1970. Provide primer when recommended by underlayment manufacturer.
- C. Asphalt Plastic Cement: Nonasbestos fibrated asphalt cement, complying with ASTM D 4586.
- D. Nails: Hot-dip galvanized steel, 0.120 inch (3 mm) diameter barbed shank, sharp-pointed, conventional roofing nails with a minimum 3/8 inch (9.5 mm) diameter head and of sufficient length to penetrate 3/4 inch (19 mm) into solid decking or at least 1/8 inch (3 mm) through plywood sheathing.
 - 1. Where nails are in contact with flashing, prevent galvanic action by providing nails made from the same metal as that of the flashing.
- E. Ridge Vent : Air Vent Inc., ShingleVent II, with exterior weather baffle, designed to be installed under asphalt shingles at ridge.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrate for compliance with requirements for substrates, installation tolerances, and other conditions affecting performance of asphalt shingles. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.03 INSTALLATION

- A. General: Comply with manufacturer's instructions and recommendations but not less than those recommended by "The NRCA Steep Roofing Manual." Should a conflict between this specification, reference standard, and the manufacturer's requirements arise, the most restrictive provision as determined by the Architect shall govern.
1. Fasten asphalt shingles to roof sheathing with nails.
- B. Felt Underlayment: Apply 1 layer of felt underlayment horizontally over entire surface to receive asphalt shingles, lapping succeeding courses a minimum of 2 inches (50 mm), end laps a minimum of 6 inches (150 mm), and hips and valleys a minimum of 6 inches (150 mm). Fasten felt with sufficient number of roofing nails or noncorrosive staples to hold underlayment in place until asphalt shingle installation. Seal end laps with asphalt plastic cement.
1. Omit felt underlayment at areas of waterproof underlayment. Lap felt underlayment over waterproof underlayment as recommended by manufacturer but not less than 6 inches (150 mm), and seal with asphalt plastic cement.
- C. Waterproof Underlayment: Apply 3 foot wide strip of waterproof underlayment running continuously along eaves. Apply in accordance with manufacturer's written instructions. Side laps shall be not less than 3 1/2 inches (90mm) and end laps not less than 6 inches (150mm).
1. In addition to eaves, apply waterproof underlayment in place of felt underlayment at valleys and locations indicated.
- D. Flashing: Install metal flashing and trim as indicated and according to details and recommendations of the "Asphalt Roofing" section of "The NRCA Steep Roofing Manual".
1. Lap underlayment over the top of flashing at eaves. Lap flashing over underlayment at rakes.
- E. Woven Valleys: Comply with NRCA recommendations.
1. Install shingles alternately from each side of valley, extending each shingle up the adjoining roof area 12 inches minimum. Do not nail closer than 6 inches to the valley center line. Where a run of shingles cause a short shingle (joint) to land in the valley, or that does not permit a 12 inch lap up adjoining roof area, cut back the adjacent shingle at a cutout location, and install full length shingle.
- F. Install asphalt shingles, beginning at roof's lower edge, with a starter strip of roll roofing or inverted asphalt shingles with tabs removed. Fasten asphalt shingles in the desired weather exposure pattern; use 6 fasteners per shingle. Use vertical and horizontal chalk lines to ensure straight coursing.
1. Cut and fit asphalt shingles at valleys, ridges, and edges to provide maximum weather protection. Provide same weather exposure at ridges as specified for roof. Lap asphalt shingles at ridges to shed water away from direction of prevailing wind.
 2. Use fasteners at ridges of sufficient length to penetrate sheathing as specified.
 3. Pattern: 1/2 shingle tab spacing offset at succeeding courses.
 4. Stop uncompleted rows in a stepping configuration. Racking is not permitted.
- G. Ridge Vents: Install ridge vents according to manufacturer's instructions.

3.04 ADJUSTING

- A. Replace any damaged materials installed under this Section with new materials that meet specified requirements.

END OF SECTION

SECTION 07900

JOINT SEALANTS

PART I - GENERAL

1.01 SECTION INCLUDES

- A. Exterior Joints in Vertical Surfaces as Indicated Below:
 - 1. Perimeter joints between materials listed above and frames of doors, louvers, and windows.
 - 2. Other joints as indicated.
- B. Interior Joints in Vertical Surfaces and Horizontal Non-traffic Surfaces as Indicated Below:
 - 1. Perimeter joints of exterior openings where indicated.
 - 2. Vertical control joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
 - 3. Perimeter joints between interior wall surfaces and frames of interior doors.
 - 4. Perimeter joints of toilet fixtures.
 - 5. Other joints as indicated.

1.02 REFERENCES

- A. ASTM C834 - Standard Specification for Latex Sealing Compounds.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants.
- E. ASTM D1667 - Standard Specification for Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).

1.03 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
- B. Provide joint sealants for interior applications that have been produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.04 SUBMITTALS

- A. General: Submit in accordance with Section 01300.
- B. Product Data: For each joint sealant product required.
- C. Samples: For selection purposes in form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.
- B. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.07 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
 2. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40°F (4.4°C).
 3. When joint substrates are wet.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Type 1 - General Purpose Exterior Sealant: Polyurethane; ASTM C920, Type S, Grade NS, Class 25; single component.
 1. Sonolastic NP-1; Sonneborne
 2. Dymonic; Tremco
 3. Sikaflex-1a; Sika
 4. Dynatrol 1; Pecora
 5. Vulkem 921; Vulkem
 6. Chem-Calk 900; Bostik
- C. Type 2 - General Purpose Exterior Sealant: Polyurethane; ASTM C920, Type M, Grade NS, Class 25; two component.
 1. Sonolastic NP-2; Sonneborne

2. Dymeric; Tremco
3. Sikaflex-2c, NS; Sika
4. Dynatrol 2; Pecora
5. Vulkem 922; Vulkem
6. Chem-Calk 500; Bostik

D. Type 3 - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.

1. Tremco Acrylic Latex; Tremco
2. AC-20; Pecora
3. Chem-Calk 600; Bostik

2.02 JOINT SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

1. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, nonoutgassing in unruptured state.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.03 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 3. Remove laitance and form release agents from concrete.
 4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.
- D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
1. Provide concave joint configuration unless otherwise indicated.

3.04 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.05 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

3.06 SCHEDULE

- A. Exterior Joints in Masonry and Between Masonry and Adjacent Work: Type 2.
- B. Exterior Joints for Which No Other Sealant Type is Indicated: Type 1; colors as selected.
- C. Interior Joints for Which No Other Sealant is Indicated: Type 3; colors as selected.
- D. Joints Between Plumbing Fixtures and Walls and Floors: Type 4.

END OF SECTION

SECTION 08110

STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Steel doors and frames.

1.02 RELATED SECTIONS

- A. Section 04200 - Unit Masonry: Building anchors into and grouting frames in masonry construction.
- B. Section 08710 - Finish Hardware: Door hardware and weatherstripping.
- C. Section 09900 - Painting: Field painting primed doors and frames.

1.03 REFERENCES

- A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- B. ASTM A153 - Zinc Coating (Hot Dip) on Iron and Steel Hardware.
- C. ASTM A366 - Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.
- D. ASTM A525/A525M - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process [Metric].
- E. ASTM A526-90 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality.
- F. ASTM A569/A569M - Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality
- G. ASTM A620/A620M - Normalized High-Strength Low-Alloy Structural Steel Plates.
- H. ASTM A642 - Steel Sheet, Zinc-Coated (Galvanized) Carbon Steel Wire.
- I. ASTM E152 - Methods of Fire Tests of Door Assemblies.
- J. DHI (Door Hardware Institute) - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- K. NFPA 80 - Fire Doors and Windows.
- L. NFPA 252 - Fire Tests for Door Assemblies.
- M. SDI-100 - Standard Steel Doors and Frames.
- N. UL 10B - Fire Tests of Door Assemblies.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Section 01300.

- B. Product Data: Submit for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, profiles, and finishes.
 - C. Shop Drawings: Show fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - D. Door Schedule: Submit schedule of doors and frames using same reference numbers for details and openings as those on Contract Drawings.
 - 1. Indicate coordination of glazing frames and stops with glass and glazing requirements.
- 1.05 QUALITY ASSURANCE
- A. Provide doors and frames complying with ANSI/SDI 100 "Recommended Specifications for Standard Steel Doors and Frames" and as specified.
 - B. Fire-Rated Door Assemblies: Units that comply with NFPA 80, are identical to door and frame assemblies tested for fire-test-response characteristics per ASTM E 152, and are labeled and listed by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction.
- 1.06 DELIVERY, STORAGE, AND HANDLING
- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
 - B. Inspect doors and frames on delivery for damage. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect; otherwise, remove and replace damaged items as directed.
 - C. Store doors and frames at building site under cover. Place units on minimum 4-inch- (100-mm-) high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If cardboard wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch (6-mm) spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Steel Doors and Frames:
 - a. Ceco Door Products.
 - b. Curries Co.
 - c. Steelcraft.

2.02 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial-quality carbon steel, pickled and oiled, complying with ASTM A 569 (ASTM A 569M).
- B. Cold-Rolled Steel Sheets: Carbon steel complying with ASTM A 366 (ASTM A 366M), commercial quality, or ASTM A 620 (ASTM A 620M), drawing quality, special killed.

- C. Galvanized Steel Sheets: Zinc-coated carbon steel complying with ASTM A 526 (ASTM A 526M), commercial quality, or ASTM A 642 (ASTM A 642M), drawing quality, hot-dip galvanized according to ASTM A 525, with A 60 or G 60 (ASTM A 525M, with Z 180 or ZF 180) coating designation, mill phosphatized.
- D. Supports and Anchors: Fabricated from not less than 0.0478-inch- (1.2-mm-) thick steel sheet; 0.0516-inch- (1.3-mm-) thick galvanized steel where used with galvanized steel frames.
- E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize complying with ASTM A 153, Class C or D as applicable.

2.03 DOORS

- A. Steel Doors: Provide 1-3/4-inch- (44-mm-) thick doors of materials and ANSI/SDI 100 grades and models specified below, or as indicated on Drawings or schedules:
 - 1. Exterior Doors: Grade III, extra heavy-duty, Model 2, seamless design, minimum 0.0635-inch- (1.6-mm-) thick (16 gage) galvanized steel sheet faces.

2.04 FRAMES

- A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, according to ANSI/SDI 100, and of types and styles as shown on Drawings and schedules. Conceal fastenings, unless otherwise indicated.
 - 1. Fabricate interior frames of minimum 0.0598-inch- (1.5-mm-) thick (16 gage) cold-rolled steel sheet.
 - 2. Form exterior frames from 0.0785-inch- (2.0-mm-) thick (14 gage) galvanized steel sheet.
 - 3. Fabricate frames with mitered or coped corners, continuously welded construction for all interior and exterior doors.
- B. Anchors: Provide 4 anchors per jamb, consisting of 3 wall anchors and 1 floor anchor.
 - 1. Stud Partitions: Lock-in wall anchors.
 - 2. Masonry: Masonry T-shaped anchors.
- C. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.
- D. Plaster Guards: Provide minimum 0.0179-inch- (0.45-mm-) thick steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.
- E. Grout: When required in masonry construction, as specified in Division 4 Section "Unit Masonry."

2.05 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site. Comply with ANSI/SDI 100 requirements.
 - 1. Internal Construction: One of the following manufacturer's standard core materials according to SDI standards, to meet the specified performance criteria:
 - a. Resin-impregnated paper honeycomb.
 - b. Rigid polyurethane conforming to ASTM C 591.
 - c. Rigid polystyrene conforming to ASTM C 578.
 - d. Unitized steel grid.
 - e. Vertical steel stiffeners.

- f. Rigid mineral fiber with internal sound deadener on inside of face sheets.
 - 2. Clearances: Not more than 1/8 inch (3.2 mm) at jambs and heads, except not more than 1/4 inch (6.4 mm) between non-fire-rated pairs of doors. Not more than 3/4 inch (19 mm) at bottom.
 - a. Fire Doors: Provide clearances according to NFPA 80.
 - B. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel sheet.
 - C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
 - D. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
 - E. Galvanized Steel Doors, Panels, and Frames: For the following locations, fabricate doors, panels, and frames from galvanized steel sheet according to SDI 112. Close top and bottom edges of doors flush as an integral part of door construction or by addition of minimum 0.0635-inch- (1.6-mm-) thick galvanized steel channels, with channel webs placed even with top and bottom edges. Seal joints in top edges of doors against water penetration.
 - 1. At exterior locations and where indicated.
 - F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
 - G. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies.
 - 1. Unless otherwise indicated, provide thermal-rated assemblies with U-value rating of 0.41 Btu/sq. ft. x h x deg F (2.33 W/sq. m x K) or better.
 - H. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI 107 and ANSI A115 Series specifications for door and frame preparation for hardware.
 - I. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.
 - J. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - K. Glazing Stops: Minimum 0.0359-inch- (0.9-mm-) thick steel or 0.040-inch- (1-mm-) thick aluminum.
 - 1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
 - 2. Provide screw-applied, removable, glazing beads on inside of glass, louvers, and other panels in doors.
- 2.06 FINISHES, GENERAL
- A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
 - B. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for steel sheet finishes.
 - C. Apply primers and organic finishes to doors and frames after fabrication.

2.07 GALVANIZED STEEL SHEET FINISHES

- A. Surface Preparation: Clean surfaces with nonpetroleum solvent so that surfaces are free of oil or other contaminants. After cleaning, apply a conversion coating of the type suited to the organic coating applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
 - 1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.
- B. Factory Priming for Field-Painted Finish: Where field painting after installation is indicated, apply air-dried primer specified below immediately after cleaning and pretreatment.
 - 1. Shop Primer: Zinc-dust, zinc-oxide primer paint complying with performance requirements of FS TT-P-641, Type II.

2.08 STEEL SHEET FINISHES

- A. Surface Preparation: Solvent-clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).
- B. Pretreatment: Immediately after surface preparation, apply a conversion coating of type suited to organic coating applied over it.
- C. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
 - 1. Except for frames located in existing concrete, masonry, or gypsum board assembly construction, place frames before constructing enclosing walls and ceilings.
 - 2. In masonry construction, install at least 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb.
 - 3. In metal-stud partitions, install at least wall anchors per jamb at hinge and strike levels. In steel-stud partitions, attach wall anchors to studs with screws.
 - 4. Install fire-rated frames according to NFPA 80.
- C. Door Installation: Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI 100.
 - 1. Fire-Rated Doors: Install with clearances specified in NFPA 80.
 - 2. Smoke-Control Doors: Comply with NFPA 105.

3.02 ADJUSTING AND CLEANING

- A. Prime Coat Touchup: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION

SECTION 08360

SECTIONAL OVERHEAD DOORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Steel frame and non-insulated steel panels.

1.02 SUBMITTALS

- A. General: Submit the following in accordance with Section 01300.
- B. Product Data: Roughing-in diagrams, and installation instructions for each type and size of overhead door. Include manufacturer's operating instructions and maintenance data.
- C. Shop Drawings: Special components and installations which are not fully dimensioned or detailed in manufacturer's data.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide each sectional overhead door as a complete unit produced by a single manufacturer, including frames, sections, brackets, guides, tracks, counterbalance mechanisms, hardware, and installation accessories.
- B. Wind Loading: Design and reinforce sectional overhead doors to withstand a 25-psf wind-loading pressure.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include:
 - 1. Overhead Door Corp.: Series 420.
 - 2. Clopay: Model 620
 - 3. Wayne Dalton: Model 2420.

2.02 STEEL SECTIONS

- A. Construct door sections from hot-dipped galvanized steel sheets.
 - 1. Steel sheet thickness: 0.036 inch (20 gage).
 - 2. Exterior section Face: Ribbed or fluted, to suit manufacturer's standards.
- B. Fabricate sections from a single sheet to provide units not more than 24 inches high, and nominally 2 inches deep. Roll horizontal meeting edges to a continuous shiplap, rabbeted, or keyed weather seal, with a reinforcing flange return.
- C. Enclose open section with 16-gage galvanized steel channel, end stiles welded in place. Provide intermediate stiles, cut to door section profile, spaced at not more than 48 inches o.c. and welded in place.

- D. Reinforce bottom section with a continuous channel or angle conforming to bottom section profile.
- E. Reinforce sections with continuous horizontal and diagonal reinforcing, as required by door width and design wind loading. Provide galvanized steel bars, struts, trusses or strip steel, formed to depth, and bolted or welded in place.
- F. Finish Door Sections as Follows: Apply manufacturer's standard prime and finish coats, applied to interior and exterior door faces.

2.03 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Provide manufacturer's standard, 2 inch, galvanized-steel track system, and designed for clearances shown. Provide complete track assembly including brackets, bracing and reinforcing for rigid support of ball-bearing roller guides for required door type and size. Slope tracks at proper angle from vertical, or otherwise design to ensure tight closure at jambs when door unit is closed. Weld or bolt to track supports.
- B. Track Reinforcement and Supports: Provide galvanized-steel track reinforcement and support members. Secure, reinforce and support tracks as required for size and weight of door to provide strength and rigidity without sag, sway, and vibration during opening and closing of doors.
- C. Support and attach tracks to opening jambs with continuous angle welded to tracks and attached to wall. Support horizontal (ceiling tracks) with continuous angle welded to track and supported by laterally braced attachments to overhead structural members at curve and end of tracks. Bracket mounted or clip mounted angle track will not be acceptable.
- D. Weather Seals: Manufacturer's standard perimeter seals.

2.04 HARDWARE

- A. General: Provide heavy-duty, rust-resistant hardware, with galvanized or cadmium-plated or stainless steel fasteners, to suit type of door.
- B. Hinges: Provide minimum 1 1/2 gage steel hinges at each end stile and at each intermediate stile, per manufacturer's recommendations for size of door. Attach hinges to door sections through stiles and rails with self-tapping fasteners.
- C. Rollers: Provide heavy-duty rollers, with steel ball bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Provide case-hardened steel roller tires to suit size of track.
- D. Pull Handles, Locks and Latches: For manually operated doors, furnish pull rope, lifting handles, locks, and locking device as follows:
 1. Lifting Handles: Galvanized steel.
 2. Locks: Double bar lock on the interior that engages both tracks - cylinders for doors to be keyed alike.

2.05 COUNTERBALANCING MECHANISM

- A. Torsion Spring: Operation by torsion-spring counterbalance mechanism, consisting of adjustable-tension, tempered-steel torsion springs mounted on a solid steel shaft. Connect to door with galvanized aircraft-type lift cables. Provide springs calibrated for 10,000 cycles minimum.
- B. Provide cast-aluminum or grey-iron casting cable drums, grooved to receive cable. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of shaft.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Install door, track, and operating equipment complete with necessary hardware, jamb and head mold stops, anchors, inserts, hangers, and equipment supports according to Shop Drawings, manufacturer's instructions, and as specified.
- B. Fasten vertical track assembly to framing at not less than 24 inches o.c. Hang horizontal track from structural overhead framing with angle or channel hangers, welded and bolt-fastened in place. Provide sway bracing, diagonal bracing, and reinforcing as required for rigid installation of track and door .
- C. After completing installation, including work by other trades, lubricate, test, and adjust doors to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.

END OF SECTION

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this section.

1.02 DESCRIPTION OF WORK

- A. The work of this section includes, but is not limited to, the following:
 - 1. Providing hardware for all doors, except doors provided with their own hardware.
 - 2. Providing lock cylinders for all work requiring cylinders.
 - 3. Providing the services of a qualified hardware consultant to prepare detailed schedules of hardware required for the project.

1.03 RELATED WORK

- A. Carefully examine all of the Contract Documents for requirements which affect the work of this section. Other specifications sections which directly relate to the work of this section include, but are not limited to, the following:
 - 1. Section 08110 - Steel Doors and Frames

1.04 INTENT

- A. A major intent of the work of this section is to provide hardware for every door in the project, except as indicated, so that each door functions correctly for its intended use. Provide only hardware that complies with applicable codes and requirements of authorities having jurisdiction including requirements for barrier-free accessibility.

1.05 QUALITY ASSURANCE

- A. Hardware supplier shall have in his employ one or more members of the Door and Hardware Institute to include at least one Certified Architectural Hardware Consultant in good standing, who shall be responsible for preparation of the Finish Hardware Schedule. This Consultant shall be acceptable to the Architect and is to ensure that the intent requirement of this specification is fulfilled, and to certify that the work of this section meets or exceeds the requirements specified in this section and the requirements of authorities having jurisdiction.
- B. Hardware supplier shall warrant and guarantee, in writing, that hardware supplied is free of defective material and workmanship. Supplier shall further warrant and guarantee for a period of one year from Owner's Use and Occupancy that the hardware shall function in a satisfactory manner without binding, collapse, or dislodging of its parts, provided the installation is made to the manufacturer's recommendations.
- C. The hardware supplier shall repair or remedy, without charge, any defect of workmanship or material for which he is responsible hereunder.

1.06 SUBMITTALS

- A. Submit the following in accordance with SECTION 01300 - Submittals:
 - 1. Schedule: Submit to the Architect six (6) copies of the complete hardware schedule within fourteen (14) days after receipt of contract award. Submit therewith complete catalog cuts and descriptive data of all products specifically scheduled therein. No materials shall be ordered or templates issued until the hardware schedule has been approved by the Architect. Form and detail of hardware schedule shall be in vertical format in conformance to the door and hardware industry standards. All hardware sets shall be clearly cross-referenced to the hardware set numbers listed in this specification.
 - 2. Samples: If requested, submit to the Architect for approval, a complete line of samples as directed. Samples shall be plainly marked giving hardware number used in this specification, the manufacturer's numbers, types and sizes. The Architect will deliver approved samples to the project site to be stored. Samples will remain with the Architect until delivery of all hardware to the project is complete, after which time they will be turned over to the General Contractor for incorporation into the work.
 - 3. Keying System Submission: Before cylinders are ordered, submit a complete proposed keying system for approval. This should be done after a keying meeting has been held with the owners representative.

1.07 PRODUCT DELIVERY , STORAGE AND HANDLING

- A. Delivery of hardware shall be made to the project by the Hardware Supplier in accordance with the instructions of the General Contractor.
- B. The finish hardware shall be delivered to the jobsite and received there by the General Contractor. The General Contractor shall prepare a locked storage room with adequate shelving, for all hardware. The storage room shall be in a dry, secure area, and shall not include storage of other products by other trades.
- C. The General Contractor shall furnish the Hardware Supplier with receipts for all hardware and accessory items received, and shall send copies of these receipts to the Architect, if requested.

1.08 REGULATORY REQUIREMENTS

- A. Conform to all applicable codes. Provide all throws, projections, coatings, knurling, opening and closing forces, and other special functions required by State and Local Building Codes, and all applicable Handicap Code requirements.
- B. For fire rated openings provide hardware complying with NFPA 80 and NFPA 101 without exception. Provide only hardware tested by UL for the type and size of door installed and fire resistance rating required.

1.09 SPECIAL REQUIREMENTS

- A. Hardware Supplier shall determine conditions and materials of all doors and frames for proper application of hardware.
- B. The Hardware Schedule shall list the actual product series numbers. Bidders are required to follow manufacturers' catalog requirement for the actual size of door closers, brackets and holders. All door opening sizes are as noted on the Door Schedule and all hardware shall be in strict accordance with requirements of height, width, and thickness.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Hinges	McKinney Stanley Bommer	Scranton, PA New Britain, CT Landrum, SC
Locksets	Sargent Schlage Best	New Haven, CT Colorado Springs, CO Indianapolis, IN
Door Closers	Sargent LCN Norton	New Haven, CT Princeton, IL Charlotte, NC
Door Stops	Glynn Johnson Ives Rockwood	Indianapolis, IN New Haven, CT Rockwood, PA
Push /Pulls	Rockwood Burns Ives	Rockwood, PA Erie, PA New Haven, CT
Protective Plates	Rockwood Burns Ives	Rockwood, PA Erie, PA New Haven, CT
Silencers	Ives Glynn Johnson Rockwood	New Haven, CT Indianapolis, IN Rockwood, PA

2.02 MATERIALS AND QUALITY

- A. All hardware shall be of the best grade of solid metal entirely free from imperfections in manufacturer and finish.
- B. Qualities, weights, and sizes given herein are the minimum that will be accepted. It is the responsibility of the Hardware Supplier to supply the specified size and weight of hardware and the proper function of hardware in each case and to provide UL approved hardware at all fire-rated doors.
- C. Provide, as far as possible, locks of one lock manufacturer and hinges of one hinge manufacturer. Modifications to hardware that are necessary to conform to construction shown or specified shall be provided as required for the specified operation and functional features.

2.03 HARDWARE DESIGNATIONS

- A. All items of hardware are referenced by manufacturer's names and numbers. The manufacturer's names and numbers are used to define the function, design, and quality of the material to be supplied.

Substitution of products other than those listed shall be submitted to the Architect at least ten days prior to the bid date. The Architect shall be the sole judge of any proposed substitution.

2.04 TEMPLATES

- A. Hardware supplier shall immediately, but not later than three (3) days after approval of his Schedule by the Architect, furnish the General Contractor with complete template information necessary for the fabrication of doors, frames, etc. No templates shall be furnished prior to the approval of the hardware schedule.

2.05 HARDWARE FOR LABELED FIRE DOORS, EXIT DEVICES AND SMOKE DOORS

- A. Hardware shall conform to requirements of NFPA 80 for labeled fire doors and to NFPA 101 for exit doors, as well as to other requirements specified. Labeling and listing by UL Building Materials Directory, for class of door being used will be accepted as evidence of conformance to these requirements. Install minimum latch throw as specified on label of individual doors. Provide hardware listed by UL except where heavier materials, larger sizes, or better grades are specified herein under paragraph entitled "Hardware Sets". In lieu of UL labeling and listing, test reports from a nationally recognized testing agency may be submitted showing that hardware has been tested in accordance with UL test methods and that it conforms to NFPA requirements. Specific hardware requirements of door or frame manufacturers which exceed sizes or weights of hardware herein listed shall be provided with no additional charge.

2.06 KEYS AND KEYING

- A. The hardware supplier shall review the specific hardware functions with the Architect and owner at the time of the keying review, to assure the appropriateness of each of the hardware functions. Failure to make this review does not relieve the hardware supplier from providing the proper functions.
- B. Key System: All cylinders shall be Masterkeyed and/or Grandmaster Keyed to a new system or keyed to the existing key system.
 1. Master Keys, Grandmaster Keys: Furnish six (6) keys for each set, if required.
 2. Furnish three (3) change keys for each cylinder keyed differently; six (6) change keys for each set keyed alike, and in sets where only (2) cylinders are keyed alike, four (4) change keys will be required.
 3. Master Keys shall be sent to the Owner by registered mail, return receipt required.

2.07 FASTENERS

- A. Manufacture hardware to conform to published templates, generally prepared for machine screw installation.
- B. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Furnish exposed screws to match the hardware finish, or, if exposed in surfaces of other work, to match the finish of such other work as closely as possible, except as otherwise indicated.
- C. Provide concealed fasteners for hardware units which are exposed when the door is closed, except to the extent no standard manufactured units of the type specified are available with concealed fasteners. Do not use thru-bolts unless specifically approved by the Architect.
- D. All hardware shall be installed only with fasteners supplied by manufacturers of specific products.

2.08 PACKING AND MARKING

- A. All hardware shall have the required screws, bolts and fastenings necessary for proper installation and shall be wrapped in the same package as the hardware item for which it is intended and shall match finish of hardware with which to be used.

- B. Each package shall be clearly labeled indicating the portion of the work for which it is intended.

2.09 ENVIRONMENTAL CONCERN FOR PACKAGING

- A. The hardware shipped to the jobsite is to be packaged in biodegradable packs such as paper or cardboard boxes and wrapping. If non-biodegradable packing such as plastic, plastic bags or large amounts of styrofoam is utilized, then the Contractor will be responsible for the disposal of the non-biodegradable packing to a licensed or authorized collector for recycling of the non-biodegradable packing.

2.10 FINISH HARDWARE DESCRIPTION

- A. Hardware items shall conform to respective specifications and standards and to requirements specified herein.

- B. Materials And Finish: Materials And Finishes Shall Be:
To match the existing in the area being used.

C. Hinges and Pivots:

1. Number of hinges or pivots per door: two hinges or pivots are intended to be provided for doors up to and including five feet in height, and an additional hinge for each two-and-one-half feet or fraction thereof, of the height of the door. Dutch doors are to be provided with four hinges.
2. All hinges on exterior doors shall be full-mortise Continuous Geared Hinges. Geared Hinges shall be manufactured of extruded 6063-T6 aluminum alloy temper. Hinges shall consist of three interlocking extrusions in a pinless assembly applied to the full height of the door and frame. All hinges shall be manufactured non-handed. Door leaf and jamb leaf shall be geared together for the entire length of the hinge and joined by a cover channel. All Geared Hinges shall be heavy duty (HD).
3. Geared Hinges shall be Pemko, McKinney or Select as follows:

Pemko	CFM SLFHD Series
McKinney	MCK-12HD
Select	SL11HD
4. Hinges on interior doors shall be oil-impregnated bearings, steel and sized as follows, unless other wise specified in the hardware sets below:

<u>Door thickness</u>	<u>Door width</u>	<u>Hinge Weight</u>	<u>Hinge</u>
1-3/4"	40" and under	Regular	4-1/2"
1-3/4"	Over 40"	Extra heavy	5 x 4-1/2"

Width of hinge shall be determined by trim conditions
5. All bearing hinges shall have flush bearings and button tips. Plain bearing hinges shall be furnished only on doors so noted in Hardware Sets.
6. Hinges shall be McKinney, Stanley or Bommer as follows:

McKinney	Stanley	Bommer
T2714	F179	5000
TA2714	FBB179	BB5000
T4A3786	FBB168	BB5004

D. Door Closers:

1. Door closers shall have fully hydraulic, full rack and pinion action. Cylinder body shall be 1-1/2" in diameter, and double heat treated pinion shall be 11/16" in diameter.
2. Hydraulic fluid shall be of a type requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
3. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and hydraulic back-check.

4. All closers shall have solid forged steel main arms (and forged forearms for parallel arm closers).
5. Closer arms (and metal covers when specified) shall have a powder coating finish .
6. Provide drop, mounting plates where required.
7. Do not locate closers on the side of doors facing corridors, passageways or similar type areas. Where it is necessary, due to certain conditions and approval of the Architect, to have closers in corridors, provide such closers with parallel or track type arms.
8. All door closers shall be adjusted by the installer in accordance with the manufacturer's templates and written instructions. Closers with parallel arms shall have back-check features adjusted prior to installation.
9. Closers shall conform to all applicable code requirements relative to setting closing speeds for closers and maximum pressure for operating interior and exterior doors.
10. Door closers meeting this specification are as follows:

<u>LCN</u>	<u>Sargent</u>	<u>Norton</u>
Exterior 4111S-CUSH	281 - CPS	PR7560 x S130
4111S-H-CUSH	281 - CPSH	PR7560 x H130
Interior 4011	281 - 0	7500
4111	281 - P10	PR7560
4040SE	2407 Series	7700PT
4000T	281 - OT x spec. Temp.	7700STP

E. Locksets, Latch Sets:

1. Cylindrical type shall be heavy-duty ANSI A156.2, Series 4000, Grade 1, 2-3/4" backset, six pin cylinder with lever handles.

<u>Manufacturer</u>	<u>Series</u>	<u>Lever Design</u>
Schlage	D	RHO
Sargent	10 Line LL	
Best	9K	15C

2. Lock functions as indicated in the hardware schedule shall be as follows:

<u>Function</u>	<u>Schlage</u>	<u>Sargent</u>	<u>Best</u>
A	80	04	EW
B	50	05	E
C	10	15	N
D	70	37	J
E	60	16	B6/B7
F	40	65	LF

F. Mortise Deadlocks:

1. Shall be as mortise type, ANSI A115.5, Grade 1, ADA turn lever:

<u>Function</u>	<u>Schlage</u>	<u>Sargent</u>	<u>Best</u>
A	L462	4874	38H-M
B	L460	4875	38H-K
C	L464	4876	38H-L
D	L463	4877	38H-R

G. Push Plates, Door Pulls, Push/pull Bars:

1. Shall be as manufactured by Rockwood, Burns or Ives.
 - a. Push plates shall be 4" x 16" x .050 thickness unless otherwise listed in hardware sets.

Rockwood	70 Series
Burns	50 Series
Ives	8200 Series
 - b. Door pulls shall be 1" x 10"

Rockwood	111
Burns	26C
Ives	8103-0

- c. Push/Pull bars
 - Rockwood 11147
 - Burns 26C x 442

H. Kick Plates, Armor Plates, Mop Plates:

- 1. Kick plates shall be 8 in. high. Armor plates shall be 34 in. high. Mop plates shall be 4 in. high. All plates shall be 2 in. less the width of door. Plates shall be .050 thickness, bevel 4 edges, screws shall be oval head counter-sunk.

I. Stops:

- 1. Shall be furnished at all doors. Wherever an opened door or any item of hardware thereon strikes a wall, at 90 degrees. Provide wall bumpers, unless otherwise indicated in hardware sets.
- 2. Where wall bumpers cannot be effectively used, a floor stop shall be furnished and installed.
- 3. Provide roller bumpers for each door where two doors interfere with each other in swinging.

<u>Manufacturer</u>	<u>Wall Bumpers</u>	<u>Floor Stops</u>	<u>Roller Bumpers</u>
Rockwood	409	440,442	456
Ives	407 1/2	436B, 438B	470 Series
Glynn Johnson	WB 50XT	FB13, FB14	RB-3

J. Silencers:

- 1. Provide silencers on all metal and wood frames. Silencers shall be Ives 20/21, Glynn Johnson 64/65 or Rockwood 608/609.

K. Exit Devices:

- 1. Shall be Von Duprin, Sargent or Precision as follows:

<u>Function</u>	<u>Von Duprin</u>	<u>Sargent</u>	<u>Precision</u>
A	CD99NL-OP	16-8804	1103CD x 1123-38
B	CD99EO	16-8810	1101CD x 1123-38
C	99L	8813ET	1108 x 39L x 1123-38
D	99L-BE	8815ET	1108A x 39L x 1123-38
E	99EO-F	12-8810	FL-1101 x 1123-38
F	99L-F	12-8813ET	FL-1108 x 39L x 1123-38
G	99L-F-BE	12-8815ET	FL-1108A x 39L x 1123-38
H	CD9927EO	16-8710	1201CD x 1123-38
I	9927L	8713ET	1208 x 39L x 1123-38
J	9927L-BE	8715ET	1208A x 39L x 1123-38
K	CD9927EO x LBR	16-PP/PR8710	1201CD x 1123-38 x LBR
L	9927L x LBR	PP/PR8713ET	1208 x 39L x 1123-38 x LBR
M	9927L-BE x LBR	PP/PR8715ET	1208A x 39L x 1123-38 x LBR
N	9927EO-F	12-8710	FL-1201 x 1123-38
O	9927L-F	12-8713ET	FL-1208 x 39L x 1123-38
P	9927L-F-BE	12-8715ET	FL-1208A x 39L x 1123-38
Q	9927EO-F x LBR	12-PP/PR8710	FL-1201 x 1123-38 x LBR
R	9927L-F x LBR	12-PP/PR8713ET	FL-1208 x 39L x 1123-38 x LBR
S	9927L-F-BE x LBR	12-PP/PR8715ET	FL-1208A x 39L x 1123-38 x LBR

NOTE: Lever design shall match lock trim

- L. Weatherstripping: NGP 2525 self-adhesive silicone gasketing.

- M. Door Shoe: NGP 118N extruded aluminum with neoprene bulb projecting 23/32" and rain drip.

PART 3 - EXECUTION

3.01. INSPECTION

- A. It shall be the general contractors responsibility to inspect all door openings and doors to determine that each door and door frame has been properly prepared for the required hardware. If errors in dimensions or preparation are encountered, they are to be corrected by the responsible parties prior to the installation of hardware.

3.02 PREPARATION

- A. All doors and frames, requiring field preparation for finish hardware, shall be carefully mortised, drilled for pilot holes, or tapped for machine screws for all items of finish hardware in accordance with the manufacturers templates and instructions.

3.03 INSTALLATION/ADJUSTMENT/LOCATION

- A. All materials shall be installed in a workmanlike manner following the manufacturer's recommended instructions.
- B. Exit Devices shall be carefully installed so as to permit friction free operation of crossbar, touch bar, lever. Latching mechanism shall also operate freely without friction or binding.
- C. Door Closers shall be installed in accordance with the manufacturer's instructions. Each door closer shall be carefully installed, on each door, at the degree of opening indicated on the hardware schedule. Arm position shall be as shown on the instruction sheets and required by the finish hardware schedule.
- D. The adjustments for all door closers shall be the installers responsibility and these adjustments shall be made at the time of installation of the door closer. The closing speed and the latching speed valves, shall be adjusted individually to provide a smooth, continuous closing action without slamming. The delayed action feature or back check valve shall also be adjusted so as to permit the correct delayed action cycle or hydraulic back check cushioning of the door in the opening cycle. All valves must be properly adjusted at the time of installation. Each door closer has adjustable spring power capable of being adjusted, in the field, from size 2 thru 6. It shall be the installers responsibility to adjust the spring power for each door closer in exact accordance with the spring power adjustment chart illustrated in the door closer installation sheet packed with each door closer.
- E. Installation of all other hardware, including locksets, push-pull latches, overhead holders, door stops, plates and other items, shall be carefully coordinated with the hardware schedule and the manufacturer's instruction sheets.
- F. Locations for finish hardware shall be in accordance with dimensions listed in the pamphlet "Recommended locations for Builders' Hardware" published by the Door and Hardware Institute.

3.04 PROTECTION

- A. All exposed portions of finish hardware shall be carefully protected, by use of cloth, adhesive backed paper or other materials, immediately after installation of the hardware item on the door. The finish shall remain protected until completion of the project. Prior to acceptance of the project by the Architect and owner, the general contractor shall remove the protective material exposing the finish hardware.

3.05 CLEANING

- A. It shall be the responsibility of the general contractor to clean all items of finish hardware and to remove any remaining pieces of protective materials and labels.

3.06 HARDWARE SETS

- A. Each Hardware Set listed below represents the complete hardware requirements for one opening (single door or pair of doors). Furnish the quantities required for each set for the work. Field verify existing doors to receive new locksets before submitting hardware schedule.

HW Set 1

Door: U1A

Each Leaf Shall Have: Hinges, Lockset (Function E), Weatherstripping, Door Shoe

HW Set 2

Doors: U3, U4

Each Leaf Shall Have: Hinges, Deadlock (Function B)-mount at latchset height, Closer (180°swing), Push Plate, Pull, Kick Plate, Weatherstripping, Door Shoe

HW Set 3

Door: U2A

Each Leaf Shall Have: Hinges, Deadlock (Function D)mount at latchset height, Push Plate, Pull, Closer (180°swing), Kick Plate, Weatherstripping, Door Shoe

END OF SECTION



SECTION 09900

PAINTING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Exposed exterior items and surfaces.
- B. Exposed interior items and surfaces.
- C. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

1.02 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications: Shop priming ferrous metal.
- B. Section 06200 - Finish Carpentry: Surface preparation for gypsum board.
- C. Section 08110 - Steel Doors and Frames: Shop priming steel frames.
- D. Section 09250 - Gypsum Board Assemblies: Surface preparation for gypsum board.

1.03 REFERENCES

- A. ASTM D 16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
- B. SSPC - Steel Structures Painting Council.

1.04 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
 - 3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
 - 4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
 - 5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.05 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers and primers.
 - 1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 - 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
 - 3. Schedule: Provide schedule of all surfaces to be coated, with prime and finish coat material listed, and manufacturer's recommended wet film thickness.

- B. Samples: Submit color chips, matching colors indicated. Where color is not indicated, match existing or if new, provide manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.
 - 1. After color selection, the Architect will furnish color chips for surfaces to be coated.

1.06 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.
- B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Manufacturer's stock number and date of manufacture.
 - 4. Contents by volume, for pigment and vehicle constituents.
 - 5. Thinning instructions.
 - 6. Application instructions.
 - 7. Color name and number.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45°F (7°C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.08 PROJECT CONDITIONS

- A. Apply paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 55 and 90°F (13 and 32°C).
- B. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5°F (3°C) above the dew point; or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products in the paint schedules.
- B. Manufacturers Names: The following manufacturers are referred to in the paint schedules by use of shortened versions of their names, which are shown in parentheses:
 - 1. Benjamin Moore & Co. (Moore).
 - 2. ICI Paint Company. (ICI)

3. Sherwin-Williams Co. (S-W).

2.02 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's highest-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers listed in the schedule. Furnish manufacturer's color selections for proposed substitutions.
- C. Colors: Provide color selections made by the Architect.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.02 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
 - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 - 1. Provide barrier coats over incompatible primers or remove and reprime.
 - 2. Cementitious Materials: Prepare concrete and concrete masonry block, surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

- a. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
- 3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood at exterior locations.
- 4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
 - a. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
 - 1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 - 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 - 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
 - 1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 - 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 - 3. Provide finish coats that are compatible with primers used.
 - 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 - 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 6. Sand lightly between each succeeding coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the

- manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer on metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment at all locations except mechanical and electrical rooms..
- D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
1. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- E. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions. Walls shall have roller finish.
1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required. Back roll walls.
- F. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- G. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in occupied spaces.
- H. Mechanical Items to Be Painted Include, but Are Not Limited To, the Following:
1. Piping, pipe hangers, and supports.
 2. Insulation.
 3. Accessory items.
- I. Electrical Items to Be Painted Include, but Are Not Limited To, the Following:
1. Conduit and fittings.
 2. Panelboards.
- J. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- K. Prime Coats: Before applying finish coats, apply prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

- L. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- M. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
 - 1. Provide satin finish for final coats.
- N. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.05 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.06 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal (Hollow metal doors and frames): Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
 - 1. Full-Gloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer.
 - a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer.
 - (1) Moore: Retard-X Rust-Inhibitive Latex Primer #162.
 - (2) ICI: Decra-Shield 2000 Primer.
 - (3) S-W: DTM Acrylic Primer/Finish./B50W1.
 - b. First and Second Coats: Full-gloss, waterborne, acrylic enamel applied at spreading rate recommended by the manufacturer.
 - (1) Moore: Impervex Enamel #309.
 - (2) ICI: 4218-XXXX, Deflex Direct-To-Metal Exterior Waterborne Enamel.
 - (3) S-W: DTM Acrylic Coating Gloss (Waterborne) B66W100 Series.

3.07 INTERIOR PAINT SCHEDULE

- A. Utility Building Ceilings: 2 finish coats over a primer.
 - 1. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer.
 - a. Moore: I.M.C Waterborne Epoxy Primer M08/M09.
 - b. ICI: 3210-1200, Ultra-Hide Aquacrylic Gripper Stain Killer Primer-Sealer.
 - c. S-W: PrepRite 200 Interior Latex Primer B28W200.

2. First and Second Coats: Semi-gloss, waterborne acrylic epoxy finish applied at spreading rate recommended by the manufacturer.
 - a. Moore: Acrylic Epoxy Coating M44.
 - b. ICI: Tru Glaze WB Epoxy.
 - c. S-W: Water Based Catalyzed Epoxy B70.

- B. Woodwork (Opaque): Provide the following paint finish systems over new, interior wood surfaces, including wood shelving:
 1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a wood undercoater.
 - a. Undercoat: Alkyd- or acrylic-latex-based, interior wood undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).
 - (1) Moore: Moore's Alkyd Enamel Underbody #217.
 - (2) ICI: 030-1200, Ultra-Hide PVA Interior Primer-Sealer.
 - (3) S-W: ProMar 200 Interior Latex Primer.
 - b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).
 - (1) Moore: Moore's Regal AquaGlo Vinyl-Acrylic Latex Enamel #333.
 - (2) ICI: 1416-XXXX, Ultra-Hide Latex Semi-Gloss.
 - (3) S-W: ProMar 200 Interior Latex Semi-gloss.

- C. Ferrous Metal: Provide the following finish systems over ferrous metal:
 1. Semigloss, Acrylic-Enamel Finish: One finish coat over an enamel undercoater and a primer.
 - a. Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).
 - (1) Moore: IronClad Retardo Rust-Inhibitive Paint #163.
 - (2) ICI: 4020-1000, Deflex DTM Flat Interior/Exterior Waterborne Primer & Finish.
 - (3) S-W: DTM Acrylic Primer Finish.
 - b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).
 - (1) Moore: Moore's Regal AquaGlo Vinyl-Acrylic Latex Enamel #333.
 - (2) ICI: 1416-XXXX, Ultra-Hide Latex Semi-Gloss Interior Wall and Trim Enamel.
 - (3) S-W: ProMar 200 Interior Latex Semi-Gloss.

END OF SECTION

SECTION 10800

TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install all toilet and bath accessories.

1.02 RELATED SECTIONS

- A. Section 06100: Rough Carpentry.

1.03 SUBMITTALS

- A. Submittals shall be in accordance with Section 01300.
- B. Submit manufacturer's product data and toilet accessory schedules for approval.

1.04 QUALITY ASSURANCE

- A. Materials, devices, equipment and apparatus of a patented or of a special nature of manufacture shall be prepared applied, or installed in strict accordance with the manufacturer's directions.
- B. Work of this Section shall be executed in strict accordance with Drawings, approved Shop Drawings and approved samples.
- C. Insofar as possible, fitting, construction and fabrication of the work shall be executed at shops, ready for delivery and erection at buildings.
- D. Provide all holes, connections, and fastenings for and to work of other trades abutting, adjoining or intersecting work of this Section.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Mirrors: Bobrick B-1556 2436 frameless stainless steel.
- B. Grab bars: 18-gauge heavy-duty tested to withstand pressures of 500 pounds. Bars shall be Type 304 stainless steel, 1-1/4" diameter, .064" minimum wall thickness with 3/16" thick flanges. Bar shall pass through flanges and be brazed thereto. Bars shall be peened grips with polished ends. Bars shall be Bobrick B-550 Series, McKinney/Parker 9600 Series, ASI 3100P Series, or approved equal.
- C. Paper Towel Dispenser: Furnished by Owner, installed by Contractor.
- D. Toilet Tissue Paper Holder: Furnished by Owner, installed by Contractor.
- E. Soap Dispenser: Furnished by Owner, installed by Contractor.
- F. Surface Mounted Napkin Disposal: Furnished by Owner, installed by Contractor.

2.02 FABRICATION

- A. General: Materials shall be free from defects impairing strength, durability or appearance.
- B. Sections and shapes shall be rolled, formed, drawn or extruded as required for respective functions.
- C. Moulded work shall have sharply defined profile and shall be clean and straight. Plain work shall be leveled, straight and surfaces true and smooth. Edges, angles, and corners shall be square, clean and sharp, unless otherwise detailed.
- D. Fastenings, exposed metal fastenings, and accessories, unless Underwriters' prohibit for safety, shall be of same materials, texture, color and finish as the base metal to which applied.
- E. Molds, trim, frames and other metalwork shall be proper dimensions to receive masonry block and tile, plaster, ceramic tile, etc.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All items specified under this Section shall be installed in strict accordance with manufacturer's recommendations and details on Plan.
- B. Grab bars shall be screwed to solid blocking in stud partitions.
- C. Provide concealed wood blocking (3/4" plywood covering 32" x 32" area) in stud walls for Owner furnished items.
- D. Toilet Accessories:
 - 1. Install 1 mirror over each lavatory, in accordance with manufacturer's instructions.
 - 2. Grab bars shall be screwed to solid blocking in stud partitions.
 - 3. Install one toilet paper holder for each water closet.
 - 4. Install one paper towel dispenser for every two lavatories.
 - 5. Install one soap dispenser for each lavatory.
 - 6. Install one napkin disposal for each water closet.

END OF SECTION