Form # P 04

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING INSPECTION

PERMIT

Please Read Application And Notes, If Any, Attached

Permit Number: 040019

This is to certify that Grass Properties /Allied/Cook Construction

has permission to Build new 17,000 sq. Ft. Addition.

AT 376 Riverside Ind Pkwy CBL 354 B003001

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Notification of inspection must be given and written permission procured before this building or part thereof is lathed or otherwise closed-in. 24 HOUR NOTICE IS REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

OTHER REQUIRED APPROVALS

Fire Dept. _____

Health Dept. _____

Appeal Board _____

Other _____

Department Name

_____

Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No:	Issue Date:	CBL:
04-0019		354 B003001

Location of Construction:	Owner Name:	Owner Address:	Phone:
376 Riverside Ind Pkwy	Grass Properties	Po Box 10109	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
n/a	Allied/Cook Construction	PO Box 1396 Portland	2077722888
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:**
n/a	n/a	Additions - Commercial	IM

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Commercial / Window Manufacturing	Commercial / Shipping, Receiving & Warehouse. Build new 17,000 sq. Ft. Addition.	$12,486.00	$1,385,000.00	5

FIRE DEPT: ☐ Approved ☐ Denied — Signature:

INSPECTION: Use Group: Type: — Signature:

Proposed Project Description:
Build new 17,000 sq. Ft. Addition.

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)
Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied
Signature: Date:

Permit Taken By:	Date Applied For:
gg	01/07/2004

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland N/A	☐ Variance	☑ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone Panel 1 Zone C	☐ Conditional Use	☐ Requires Review
☐ Subdivision	☐ Interpretation	☐ Approved
☒ Site Plan #2003-0226	☐ Approved	☐ Approved w/Conditions
Maj ☒ Minor ☐ MM ☐	☐ Denied	☐ Denied
Date: 1/9/04	Date:	Date:

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT | ADDRESS | DATE | PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE | DATE | PHONE

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Zoning Copy

2003-0226
Application I. D. Number

10/20/03
Application Date

Paradigm Window Solutions
Applicant

374 Riverside Ind. Parkway, Portland, ME 04101
Applicant's Mailing Address

Paradigm Building Addition
Project Name/Description

Consultant/Agent

374 - 374 Riverside Ind Pkwy, Portland, Maine
Address of Proposed Site

Applicant Ph: (207) 878-9701 Agent Fax:
Applicant or Agent Daytime Telephone, Fax

354 B003001
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☑ Building Addition ☐ Change Of Use ☐ Residential ☐ Office ☐ Retail
☑ Manufacturing ☐ Warehouse/Distribution ☑ Parking Lot ☐ Other (specify)

17,779 s.f.
Proposed Building square Feet or # of Units

Acreage of Site

IM
Zoning

Check Review Required:

☑ Site Plan (major/minor)
☐ Subdivision # of lots
☐ PAD Review
☐ 14-403 Streets Review
☐ Flood Hazard
☐ Shoreland
☐ HistoricPreservation
☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB)
☐ Zoning Variance
☐ Other

Fees Paid: Site Plan $500.00 Subdivision Engineer Review $5,361.32 Date: 1/9/04

Zoning Approval Status:

Reviewer

☐ **Approved**
☐ **Approved w/Conditions** See Attached
☐ **Denied**

Approval Date
Approval Expiration
Extension to
☐ Additional Sheets Attached
☐ Condition Compliance signature date

Performance Guarantee ☑ **Required*** ☐ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☐ Performance Guarantee Accepted	date	amount	expiration date
☑ Inspection Fee Paid	1/8/04 date	$5,361.32 amount	
☐ Building Permit Issued	date		
☐ Performance Guarantee Reduced	date	remaining balance	signature
☐ Temporary Certificate of Occupancy	date	☐ Conditions (See Attached)	expiration date
☐ Final Inspection	date	signature	
☐ Certificate Of Occupancy	date		
☐ Performance Guarantee Released	date	signature	
☐ Defect Guarantee Submitted	submitted date	amount	expiration date

Applicant: Paradigm Window Solutions Date: 1/9/04

Address: 374 Riverside Ind. Pkwy C-B-L: 354-5-003

CHECK-LIST AGAINST ZONING ORDINANCE

Date - existing

Zone Location - I-M

Interior or corner lot -

Proposed Use/Work - Construct addition And New parking lots of

Sewage Disposal - City

Lot Street Frontage - 60' min — 470'+ shown

Front Yard - 1' for every 1' of height (33' min) — 185' shown

Rear Yard - 1' for every 1' of height up to 25' — 152' shown

Side Yard - 1' for every every 1' of height up to 25' — 152' shown

Projections -

Width of Lot - N/A

Height - 75' MAX - 33' scaled

Lot Area - No min 219,141# given

Lot Coverage/ Impervious Surface - 75% MAX — 74.5% shown

Area per Family - N/A

Off-street Parking - manfg = 67155 ÷ 1000 = 67 req
office = 10712 ÷ 400 = 27
94 req — 161 shown

Loading Bays - 6 shown — 2 req'd ok

Site Plan - Major site plan #2003-0226

Shoreland Zoning/ Stream Protection - N/A

Flood Plains - Panel 1 Zone C

Pavement Setback from lot boundaries: 10' min — 10' min shown

ALLIED/COOK
CONSTRUCTION
Planners • Managers • Design/Builders
Building Excellence Since 1958

JOHN S. BROCKINGTON
PROJECT MANAGER

P.O. BOX 1396 • PORTLAND, ME 04104
207-772-2888 • FAX 207-885-5135 • PAGER 207-264-7281
Email: jsb@alliedcook.com

ilding Permit Application

or personal property taxes or user charges on any property within
nust be made before permits of any kind are accepted.

Location/Address of Construction: 376 ~~374~~ Riverside Industrial Parkway		
Total Square Footage of Proposed Structure: 17,800	Square Footage of Lot	
Tax Assessor's Chart, Block & Lot — Chart# 354 Block# B Lot# 003	Owner: Paradigm Window	Telephone: 878-9701
Lessee/Buyer's Name (If Applicable): N/A	Applicant name, address & telephone: Allied/Cook Construction P.O. Box 1396 Portland, ME 04104	Cost Of Work: $ 1,385,000 Fee: $ 12,486

Current use: Window manufacturing

If the location is currently vacant, what was prior use: _____

Approximately how long has it been vacant: _____

Proposed use: Shipping, receiving & warehouse

Project description:

DEPT. OF BUILDING INSPECTION
CITY OF PORTLAND, ME
RECEIVED
JAN 7 2004

Contractor's name, address & telephone: Allied/Cook Construction
P.O. Box 1396, Portland, ME 04104

Who should we contact when the permit is ready: John Brockington

Mailing address:

We will contact you by phone when the permit is ready. You must come in and pick up the permit and review the requirements before starting any work, with a Plan Reviewer. A stop work order will be issued and a $100.00 fee if any work starts before the permit is picked up. **PHONE: 772-2888** +/- cell

IF THE REQUIRED INFORMATION IS NOT INCLUDED IN THE SUBMISSIONS THE PERMIT WILL BE AUTOMATICALLY DENIED AT THE DISCRETION OF THE BUILDING/PLANNING DEPARTMENT, WE MAY REQUIRE ADDITIONAL INFORMATION IN ORDER TO APROVE THIS PERMIT.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature of applicant:	Date: 1/7/04

This is NOT a permit, you may not commence ANY work until the permit is issued.
If you are in a Historic District you may be subject to additional permitting and fees with the Planning Department on the 4th floor of City Hall

CITY OF PORTLAND
ACCESSIBILITY CERTIFICATE

Designer: Guy Labrecque CWS Architects

Address of Project 400 Riverside Industrial Parkway

Nature of Project Building Addition

Date 12/30/03

12/30/03

The technical submissions covering the proposed construction work as described above have been have been designed in compliance with applicable referenced standards found in the Maine Human Rights Law and Federal Americans with Disability Act.

(SEAL)

LICENSED ARCHITECT
GUY
T.
LABRECQUE, JR.
No. 2568
STATE OF MAINE

Signature

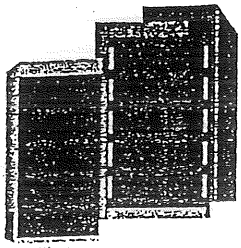
Title Architect

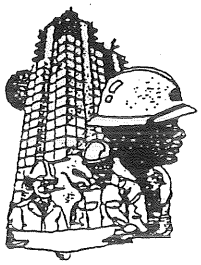
Firm CWS Architects

Address 434 Cumberland Avenue

Portland, Maine 04101

Telephone 774-4441





CITY OF PORTLAND
BUILDING CODE CERTIFICATE
389 Congress St., Rm 315
Portland, ME 04101

TO: Inspector of Buildings City of Portland, Maine
Department of Planning & Urban Development
Division of Housing & Community Service

FROM: Guy Labrecque - CWS Architects

RE: Certificate of Design

DATE: 12/30/03

These plans and/or specifications covering construction work on:

The Warehouse Addition To the Paradigm Window Solutions Facility

Have been designed and drawn up by the undersigned, a Maine registered architect/engineer according to the BOCA National Building Code/1999 Fourteenth Edition, and local amendments.

(SEAL)

LICENSED ARCHITECT
GUY
T
LABRECQUE, JR.
No. 2568
STATE OF MAINE

Signature

Title Architect

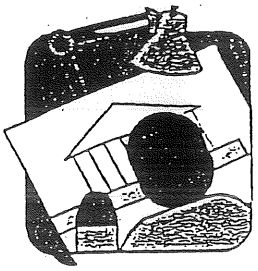
Firm CWS Architects

Address 434 Cumberland Avenue
Portland, Maine 04101

As per Maine State Law:

$50,000.00 or more in new construction, repair, expansion, addition, or modification for Building or Structures, shall be prepared by a registered design Professional.

PSH 6/20/2k



CITY OF PORTLAND MAINE

389 Congress St., Rm 315
Portland, ME 04101
Tel. – 207-874-8704
Fax – 207-874-8716

TO: Inspector of Buildings City of Portland, Maine
Planning & Urban Development
Division of Housing & Community Services

FROM DESIGNER: Guy Labrecque CWS Architects

DATE: 12/30/03

Job Name: Warehouse Addition for Paradigm Window Solutions

Address of Construction: 400 Riverside Industrial Parkway

THE BOCA NATIONAL BUILDING CODE/1999 FourteenthEDITION

Construction project was designed according to the building code criteria listed below:

Building Code and Year BOCA 1999 Use Group Classification(s) B & F-1(Mod. Haz.)

Type of Construction 2C Bldg. Height 30'-0"+ Bldg. Sq. Footage 60,088 SF

Seismic Zone S1 = 0.10 Group Class Group I

Roof Snow Load Per Sq. Ft. 45 PSF + Drift Dead Load Per Sq. Ft. Roof: 18 plus self wt of members

Basic Wind Speed (mph) 100 MPH Effective Velocity Pressure Per Sq. Ft. 20

Floor Live Load Per Sq. Ft. N/A

Structure has full sprinkler system? Yes XX No____ Alarm System? Yes XX No____
Sprinkler & Alarm systems must be installed according to BOCA and NFPA Standards with approval from the Portland Fire Department.

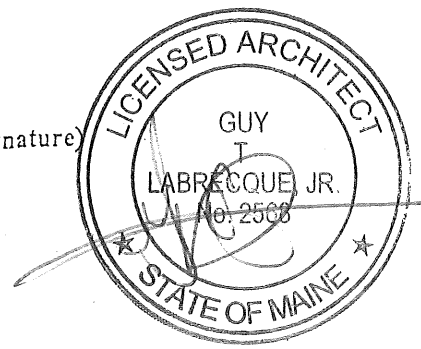
Is structure being considered unlimited area building: Yes__ No XX

If mixed use, what subsection of 313 is being considered 313.1.2 - Separated Use Groups

List Occupant loading for each room or space, designed into this Project.
Warehouse Distribution Area: 59

Shipping Office: 4

(Designers Stamp & Signature)



PSH 6/07/2K

Date 12/17/03

Project Name: Paradigm Window Solutions Project Number: 03413.pda
Renovations and Addition to the former JE Goold Building
Location: Riverside Street
Portland, ME

CODE COMPLIANCE REPORT

Principal Codes, Standards and Review Authorities Applicable to Project:

Life Safety:

a. NFPA including 101 Life Safety Code, 2003 edition
State Fire Marshall's Office
Phone: (207)624-8744 Fax: (207)624-8767

b. Portland Fire Department
Lt. Gaylan MacDougall
Phone: (207) 874-8400 Fax: (207) 874-8400

Building:

a. BOCA Building Code, 1999 edition
Portland Building Inspector, Mike Nugent
Phone: (207) 874-8700 Fax: (207) 874-8716

Accessibility:

a. ADA, Accessibility Guidelines for Buildings and Facilities.
State Fire Marshall's Office
Phone: (207)624-8744 Fax: (207)624-8767

Life Safety and Building Code Criteria:

Description of Building Function Program:

The project consists of an addition to the Paradigm Window Solutions manufacturing and distribution facility within the Riverside Industrial Park, Portland, Maine. The building is a metal clad premanufactured steel building and was formerly referred to as the JE Good Building. The building is a mixed-use facility consisting of business support space and open window manufacturing and shipping space. An open mezzanine has been built above the business use portion of the building. The scope of work will focus on the addition and minor removals along and face of the existing building as required for the addition to abut the existing exterior wall assembly. The new addition will incorporate several loading docks and will be utilized for shipping and receiving.

Occupant Classification:

NFPA 101: 2003
Chapter 40 – Industrial Occupancies – Special Purpose Industrial Occupancy

Use Group Classification:

The BOCA National Building Code: 1999
Use Group B – Business
Use Group F-1 – moderate-hazard

Specific Occupancy Areas:

Storage Rooms >50sf & <100sf	1 hour; or Automatic fire suppression system & smoke partitions
Storage Rooms >100sf	Automatic fire suppression system & smoke partitions
Physical Plant Maintenance Shop and Work Shop:	2 hours; or 1 hour & automatic fire suppression system

Type of Construction:

Existing Building: The existing building was built in two sections and is a Butler steel clad warehouse building. Steel structural system. Standing seam metal roofing. Metal siding and interior metal liner panels. Business use spaces at the far ends of the facility are separated from the manufacturing space by a 2-hour fire rated CMU block wall assembly.

NFPA 220: Type II (000) – unprotected noncombustible
BOCA: Type 2C – unprotected noncombustible

Building area:	Existing First floor:	60,088 SF

Existing Mezzanine Structure: Steel framing with metal decking and concrete floor surface.

Building area:	Existing Mezzanine:	6,020 SF

New Addition: The new addition will be of similar construction as the existing building.

Addition area:	New Additional First Floor:	17,779 SF

Fire Resistance Ratings of Structural Elements: (BOCA, Table 602)

Element	2C
Exterior Load Bearing Walls	0 hrs
Fire Separation Assemblies;	
Exits	2 hrs (1 hour per 1014.11)
Shafts	2 hrs (1 hour per 710)
Mixed use and fire area separations	3 hrs (2 hours w/ a sprinkler – 313.1.2 excptn)
Fire Partitions:	
Exit access corridors (Table 1011.4)	0 hrs with sprinkler system
Interior loadbearing walls, loadbearing partitions, columns, girders, trusses, and framing supporting roof only	0 hrs
Mezzanine floor construction	1 hrs
Roof construction – 20' or less to lowest member	0 hrs

Building Height:

BOCA – Chapter 5, Table 503

Allowable: (current 1 story structure)

Use Group B – 4 stories – 60'
Use Group F-1 – 3 stories – 50'

*Above allowable height information has been adjusted for having an existing sprinkler system.

Proposed:

The single story building addition will be a flat roofed structure of two levels. The portion of the addition directly fastening to the existing building and extending approximately 30'-0" away from the existing building will be approximately 20'-0" in height and will actually fasten to the underside of the existing roof eaves. The remaining portion of the addition will have a roof height of approximately 28'-0".

Building Area:

BOCA – Chapter 5, Table 503

Existing:

First Floor: F-1 Use: 49,704 SF // B Use: 10,384 SF – total first floor 60,088 SF
Mezzanine – 6,020 SF total Use Group F-1 (not included in building area calculations)

Allowable: Separated Mixed Use Scenario

First Floor: F-1 use: 67,500 SF // B use: 101,250 SF – total allowable 168,750 SF

* Above calculations reflect allowable adjustments for street frontage (75%) and the existing sprinkler system.
* The building could potentially be considered a "One-Story Unlimited Area Building". The building conforms to all BOCA code criteria for such a building except that the buildings fire separation distance from the nearest lot line is 28'-3" rather than 30'-0" at the Northeast property line. The argument could be made that, due to zoning ordinance setback limitations would never allow a future building to be constructed within the 30'-0" separation distance.

Proposed:

First floor – 10,384 SF total use Group B (unchanged)
First floor – 67,483 SF total use Group F-1 (this incorporates the 17,779 SF addition)
Mezzanine – 6020 SF total use Group F-1 (unchanged)

New Building total SF = 77,867 SF (not including the Mezzanine)

***Conclusion:** The current Business use portions of the existing building are separated by a 2-hour fire rated concrete masonry unit wall assembly. After incorporating the allowable sprinkler system deduction to the requirements of Table 313.1.2, this 2-hour separation is adequate. Therefore the building is being considered a "Separated, Mixed Use Facility". The additional F-1 addition falls within the allowable area constraints.

Means of Egress:

BOCA – Chapter 10
NFPA 101 – Chapter 5 & 38

Occupant Load: (BOCA, Table 1008.1.2)

Floor:	Occupancy:	Floor Area/Occ.	Floor Area	# of Occ.
First Floor	Industrial	*300 sq. ft. gross	67,483	224.9
First Floor	Offices	100 sq. ft. gross	10,384	103.84
Mezzanine	Industrial	*300 sq. ft. gross	6,020	20.07

- This is assuming that a portion of the manufacturing space will be used for storage of parts, supplies and the final product prior to shipping.
- The actual number of occupants/employees will be approximately 150 total.

Minimum Number of Exits Required:

Per BOCA, 1010.2 and Table 1010.2, each requires 2 exits. Chapters 5 and 38 and 40 of NFPA 101 require two means of egress
Any space serving more than 50 occupants shall have two exits. Applicable to the Dining/Break room.

Capacity:		**Min. Allowable:**	**Proposed:**
Exit Access Corridors:			
Width		44 inches	60 inches
Exit Stairs			
Width	.(44"/ 0.2 = 220 people per stair)	44 inches	44 inches
Doors:			
Width	(36"/0.15 = 240 people per door)	32 inches clear	36 inches
Baluster Spacing – F-1 Use			

Arrangement:	**Max. Allowable:**	**Proposed:**
Dead-end corridor	50' with sprinklers	None – N/A
Travel Distance – Group B	250' with sprinklers	75' – 0" max.
Travel Distance – Group F-1	250' with sprinklers	230' – 0" max.
Common Path of Travel	100' with sprinklers	20' – 0" max.

Protection from Hazard:

The building is equipped throughout with an automatic sprinkler system. This system will be modified as required by new floor plan arrangements and as required to meet all current codes.

Interior Finishes:

BOCA – Chapter 8
NFPA 101 – Chapters 6 & 38 & 40

Wall and Ceiling Finishes:

Exit Enclosures	Class A or B
Lobbies and Corridors	Class A or B
Office spaces	Class A, B, or C

Floor Finishes: Class I or II in corridors or exits.

Detection, Alarm, And Communications Systems:

BOCA – Chapter 9
NFPA 101 – Chapters 7 & 38 & 40

- The building will have a new fire alarm system installed in accordance with NFPA 72.

Extinguishing Requirements:

BOCA – Chapter 9
NFPA 101 – Chapters 7 & 38 & 40
NFPA 10

- Portable fire extinguishers shall be provided in accordance with NFPA 101, Section 7-7.4.1, and in accordance with NFPA 10.

...END OF CODE COMPLIANCE REPORT.

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Planning Copy

2003-0226
Application I. D. Number

10/20/2003
Application Date

Paradigm Window Solutions
Applicant

374 Riverside Ind. Parkway, Portland, ME 04101
Applicant's Mailing Address

Paradigm Building Addition
Project Name/Description

Consultant/Agent

374 - 374 **Riverside Ind Pkwy, Portland, Maine**
Address of Proposed Site

Applicant Ph: (207) 878-9701 **Agent Fax:**
Applicant or Agent Daytime Telephone, Fax

354 **B003001**
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☑ Building Addition ☐ Change Of Use ☐ Residential ☐ Office ☐ Retail ☑ Manufacturing ☐ Warehouse/Distribution ☑ Parking Lot ☐ Other (specify)

17,779 s.f. | | **IM**
Proposed Building square Feet or # of Units | Acreage of Site | Zoning

Check Review Required:

☑ Site Plan (major/minor) ☐ Subdivision # of lots ☐ PAD Review ☐ 14-403 Streets Review

☐ Flood Hazard ☐ Shoreland ☐ HistoricPreservation ☐ DEP Local Certification

☐ Zoning Conditional Use (ZBA/PB) ☐ Zoning Variance ☐ Other

Fees Paid: Site Plan **$500.00** Subdivision ____ Engineer Review **$5,361.32** Date **01/09/2004**

DEPT. OF BUILDING INSPECTION CITY OF PORTLAND, ME RECEIVED FEB - 4 2004

Planning Approval Status:

Reviewer **Sarah Hopkins**

☐ **Approved** ☑ **Approved w/Conditions** See Attached ☐ **Denied**

Approval Date **12/18/2003** Approval Expiration **12/18/2004** Extension to ____ ☑ Additional Sheets Attached

☑ OK to Issue Building Permit **Sarah Hopkins** (signature) **01/16/2004** (date)

Performance Guarantee ☑ **Required*** ☐ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☑ Performance Guarantee Accepted	**01/15/2004** (date)	**$268,066.00** (amount)	**12/31/2004** (expiration date)
☑ Inspection Fee Paid	**01/08/2004** (date)	**$5,361.32** (amount)	
☐ Building Permit Issue	(date)		
☐ Performance Guarantee Reduced	(date)	(remaining balance)	(signature)
☐ Temporary Certificate of Occupancy	(date)	☐ Conditions (See Attached)	
☐ Final Inspection	(date)	(signature)	
☐ Certificate Of Occupancy	(date)		
☐ Performance Guarantee Released	(date)	(signature)	
☐ Defect Guarantee Submitted	(submitted date)	(amount)	(expiration date)
☐ Defect Guarantee Released	(date)	(signature)	

DEPT. OF BUILDING INSPECTION CITY OF PORTLAND, ME RECEIVED FEB - 4 2004

DEPT. OF BUILDING INSPECTION CITY OF PORTLAND, ME RECEIVED FEB - 4 2004
expiration date

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
ADDENDUM

2003-0226
Application I. D. Number

Paradigm Window Solutions
Applicant

10/20/2003
Application Date

374 Riverside Ind. Parkway, Portland, ME 04101
Applicant's Mailing Address

Paradigm Building Addition
Project Name/Description

Consultant/Agent

374 - 374 Riverside Ind Pkwy, Portland, Maine
Address of Proposed Site

Applicant Ph: (207) 878-9701 **Agent Fax:**
Applicant or Agent Daytime Telephone, Fax

354 B003001
Assessor's Reference: Chart-Block-Lot

Approval Conditions of Planning

1
1. In to improve water quality treatment benefits we recommend that Casco Traps or similar hoods be inserted into each of the catch basin outlets.

2 2. We recommend that some sort of trash rack or other similar structure be installed at the inlet into the Basin control structure to prevent debris from entering and potential clogging the outlet control orifices.

3 3. Submit Sewer Capacity Letter.

Approval Conditions of Fire

1 Application requires State Fire Marshal approval.

PROJECT MANUAL

And

SPECIFICATIONS

for

WAREHOUSE ADDITION FOR PARADIGM WINDOW SOLUTIONS

Portland, Maine

12/05/03
Issued for Construction

Paradigm Window Solutions
400 Riverside Industrial Parkway
Portland ME 04104

Tenant
Phone: 207.878.9701
Fax: 207.797.6156

Allied/Cook Construction
PO Box 1396
Portland, ME 04005

Contractor
Phone: 207.772.2888
Fax: 207.885.5135

CWS Architects
434 Cumberland Avenue
Portland ME 04101-2325

Architect
Phone: 207.774.4441
Fax: 207.774.4016

Becker Structural Engineers, Inc.
75 York Street
Portland ME 04101-4550

Structural Engineering
Phone: 207.879.1838
Fax: 207.879.1822

Titan Mechanical, Inc.
PO Box 3927
41 Evergreen Drive
Portland, ME 04104

Mechanical Engineering
Phone: 207.878.5223
Fax: 207.878.5235

Favreau Electric
37 Gordan Avenue
Brunswick, Maine 04011

Electrical Engineering
Phone: 207.725.2005
Fax: 207.725.2920

INDEX OF CONTRACT DOCUMENTS
SPECIFICATIONS

CONTRACT

Division 1 – General Requirements

Division 2 – Sitework

Division 3 – Concrete

Division 4 – Masonry:

Division 5 -- Metals

Division 6- Wood & Plastics

Division 7 – Thermal & Moisture Protection

ARCHITECTURAL DRAWINGS

Part I
Bidding and Contract Documents

AIA DOCUMENT A201-1997

General Conditions of the Contract for Construction

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

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

TABLE OF ARTICLES

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AIA DOCUMENT A201-1997
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The American Institute of Architects
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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 Owner 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 9.8.

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 morgages, 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.

CHANGE ORDER

AIA DOCUMENT G701

OWNER	☐
ARCHITECT	☐
CONTRACTOR	☐
FIELD	☐
OTHER	☐

PROJECT:
(name, address)

TO CONTRACTOR:
(name, address)

CHANGE ORDER NUMBER:

DATE:

ARCHITECT'S PROJECT NO:

CONTRACT DATE:

CONTRACT FOR:

The Contract is changed as follows:

Not valid until signed by the Owner, Architect and Contractor.

The original (Contract Sum) (Guaranteed Maximum Price) was . . . . . $
Net change by previously authorized Change Orders . . . . . $
The (Contract Sum) (Guaranteed Maximum Price) prior to this Change Order was . . . . . $
The (Contract Sum) (Guaranteed Maximum Price) will be (increased) (decreased)
(unchanged) by this Change Order in the amount of . . . . . $
The new (Contract Sum) (Guaranteed Maximum Price) including this Change Order will be . . $

The Contract Time will be (increased) (decreased) (unchanged) by ( ) days.
The date of Substantial Completion as of the date of this Change Order therefore is

NOTE: This summary does not reflect changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized by Construction Change Directive.

ARCHITECT	CONTRACTOR	OWNER
Address	Address	Address
BY	BY	BY
DATE	DATE	DATE

INSTRUCTION SHEET

FOR AIA DOCUMENT G701, CHANGE ORDER

A. GENERAL INFORMATION

1. Purpose

This document is intended for use in implementing changes in the Work agreed to by the Owner, Architect and Contractor. Execution of a completed G701 form indicates agreement upon all the terms of the change, including any changes in the Contract Sum (or Guaranteed Maximum Price) and Contract Time.

2. Related Documents

This document was prepared for use under the terms of AIA general conditions first published in 1987, including AIA Document A201, General Conditions of the Contract for Construction, and the general conditions contained in AIA Documents A107 and A117.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents Price List to determine the current edition of each document.

4. Limited License for Reproduction

AIA Document G701 is a copyrighted work and may not be reproduced or excerpted from in substantial part without the express written permission of the AIA. The G701 document is intended to be used as a consumable—that is, the original document purchased by the user is intended to be consumed in the course of being used. There is no implied permission to reproduce this document, nor does membership in The American Institute of Architects confer any further rights to reproduce them.

A limited license is hereby granted to retail purchasers to reproduce a maximum of ten copies of a completed or executed G701, but only for use in connection with a particular Project.

B. CHANGES FROM THE PREVIOUS EDITION

Unlike the previous edition, the 1987 edition of AIA Document G701 requires the signatures of the Owner, Architect *and Contractor* for validity. Changes to be made over the Contractor's objection (with disputed terms to be settled afterwards) should be effected through the use of AIA Document G714, Construction Change Directive.

C. COMPLETING THE G701 FORM

1. Description of Change in the Contract

Insert a detailed description of the change to be made in the Contract by this Change Order, including any Drawings, Specifications, documents or other supporting data to clarify the scope of the change.

2. Determination of Costs

Insert the following information in the blanks provided, and strike out the terms in parentheses that do not apply:

a) the original Contract Sum (or Guaranteed Maximum Price);

b) the net change by previously authorized Change Orders (note that this does not include changes authorized by Construction Change Directive unless such a change was subsequently agreed to by the Contractor and recorded as a Change Order);

c) the Contract Sum (or Guaranteed Maximum Price) prior to this Change Order;

d) the amount of increase or decrease, if any, in the Contract Sum (or Guaranteed Maximum Price); and

e) the new Contract Sum (or Guaranteed Maximum Price) as adjusted by this Change Order.

3. Change in Contract Time

Insert the following information in the blanks provided, and strike out the terms in parentheses that do not apply:

a) the amount in days of the increase or decrease, if any, in the Contract Time; and

b) the date of Substantial Completion, including any adjustment effected by this Change Order.

D. EXECUTION OF THE DOCUMENT

When the Owner, Architect and Contractor have reached agreement on the change to be made in the Contract, including any adjustments in the Contract Sum (or Guaranteed Maximum Price) and Contract Time, the G701 documents should be executed in triplicate by the two parties and the Architect, each of whom retains an original.

APPLICATION AND CERTIFICATE FOR PAYMENT *AIA DOCUMENT G702* (Instructions on reverse side) PAGE ONE OF PAGES

TO (OWNER):

PROJECT:

APPLICATION NO:

Distribution to:
☐ OWNER
☐ ARCHITECT
☐ CONTRACTOR

PERIOD TO:

FROM (CONTRACTOR):

VIA (ARCHITECT):

ARCHITECT'S PROJECT NO:

CONTRACT FOR:

CONTRACT DATE:

CONTRACTOR'S APPLICATION FOR PAYMENT

CHANGE ORDER SUMMARY			
Change Orders approved in previous months by Owner TOTAL		ADDITIONS	DEDUCTIONS
Approved this Month			
Number	Date Approved		
TOTALS			
Net change by Change Orders			

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: _____

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 $ _____
   (Column 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, PLUS RETAINAGE** ..... $ _____
   (Line 3 less Line 6)

State of: County of:
Subscribed and sworn to before me this day of ,19
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 the above 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.)
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.

INSTRUCTION SHEET

AIA DOCUMENTS G702a/G703a

A. GENERAL INFORMATION:

AIA Document G702, *Application and Certificate for Payment*, is to be used in conjunction with AIA Document G703, *Continuation Sheet*. These documents are designed to be used on a project where a Contractor has a direct Agreement with the Owner. Procedures for their use are covered in AIA Document A201, *General Conditions of the Contract for Construction*, 1976 Edition.

B. COMPLETING THE G702 FORM:

After the Contractor has completed AIA Document G703, *Continuation Sheet*, summary information should be transferred to AIA Document G702, *Application and Certificate for Payment*.

The Contractor should sign the form, have it notarized and submit it, together with G703, to the Architect.

The Architect should review it and, if it is acceptable, complete the Architect's Certificate for Payment on this form. The completed form should be forwarded to the Owner.

C. COMPLETING THE G703 FORM:

Heading: Complete the information here consistent with similar information on AIA Document G702, *Application and Certificate for Payment*.

Columns A, B & C: These columns should be completed by identifying the various portions of the project and their scheduled value consistent with the schedule of values submitted to the Architect at the commencement of the project or as subsequently adjusted. The breakdown may be by sections of the Work or by Subcontractors and should remain consistent throughout the Project. Multiple pages should be used when required.

Column C should be subtotaled at the bottom when more than one page is used and totaled on the last page. Initially, this total should equal the original Contract Sum. The total of column C may be adjusted by Change Orders during the project.

Column D: Enter in this column the amount of completed Work covered by the previous application. This is the sum of columns D and E from the previous application. Values from column F (Materials Presently Stored) from prior payments should not be entered in this column.

Column E: Enter here the value of Work completed until the time of this application, including the value of materials incorporated in the project which were listed on the previous Application and Certificate for Payment under Materials Presently Stored (column F).

Column F: Enter here the value of Materials Presently Stored for which payment is sought. The total of the column *must* be recalculated at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Mere payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed-This Period).

Column G: Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

Column H: Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

Column I: This column is normally used only for contracts where variable retainage is permitted on a line-item basis. It need not be completed on projects where a constant retainage is withheld from the overall contract amount.

Change Orders: Although Change Orders could be incorporated by changing the schedule of values each time a Change Order is added to the Project, this is not normally done. Usually, Change Orders are listed separately, either on their own G703 form or at the end of the basic schedule. The amount of the original contract adjusted by Change Orders is to be entered in the appropriate location on the G702 form.

D. MAKING PAYMENT

The Owner should make payment directly to the Contractor based on the amount certified by the Architect on AIA Document G702, *Application and Certificate for Payment*. The completed form contains the name and address of the Contractor. Payment should not be made to any other party unless specifically indicated on this form.

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 NUMBER:
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO:

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

INSTRUCTION SHEET

AIA DOCUMENTS G702a/G703a

A. GENERAL INFORMATION:

AIA Document G702, *Application and Certificate for Payment*, is to be used in conjunction with AIA Document G703, *Continuation Sheet*. These documents are designed to be used on a project where a Contractor has a direct Agreement with the Owner. Procedures for their use are covered in AIA Document A201, *General Conditions of the Contract for Construction*, 1976 Edition.

B. COMPLETING THE G702 FORM:

After the Contractor has completed AIA Document G703, *Continuation Sheet*, summary information should be transferred to AIA Document G702, *Application and Certificate for Payment*.

The Contractor should sign the form, have it notarized and submit it, together with G703, to the Architect.

The Architect should review it and, if it is acceptable, complete the Architect's Certificate for Payment on this form. The completed form should be forwarded to the Owner.

C. COMPLETING THE G703 FORM:

Heading: Complete the information here consistent with similar information on AIA Document G702, *Application and Certificate for Payment*.

Columns A, B & C: These columns should be completed by identifying the various portions of the project and their scheduled value consistent with the schedule of values submitted to the Architect at the commencement of the project or as subsequently adjusted. The breakdown may be by sections of the Work or by Subcontractors and should remain consistent throughout the Project. Multiple pages should be used when required.

Column C should be subtotaled at the bottom when more than one page is used and totaled on the last page. Initially, this total should equal the original Contract Sum. The total of column C may be adjusted by Change Orders during the project.

Column D: Enter in this column the amount of completed Work covered by the previous application. This is the sum of columns D and F from the previous application. Values from column F (Materials Presently Stored) from prior payments should not be entered in this column.

Column E: Enter here the value of Work completed until the time of this application, including the value of materials incorporated in the project which were listed on the previous Application and Certificate for Payment under Materials Presently Stored (column F).

Column F: Enter here the value of Materials Presently Stored for which payment is sought. The total of the column *must* be recalculated at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Mere payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed-This Period).

Column G: Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

Column H: Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

Column I: This column is normally used only for contracts where variable retainage is permitted on a line item basis. It need not be completed on projects where a constant retainage is withheld from the overall contract amount.

Change Orders: Although Change Orders could be incorporated by changing the schedule of values each time a Change Order is added to the Project, this is not normally done. Usually, Change Orders are listed separately, either on their own G703 form or at the end of the basic schedule. The amount of the original contract adjusted by Change Orders is to be entered in the appropriate location on the G702 form.

D. MAKING PAYMENT

The Owner should make payment directly to the Contractor based on the amount certified by the Architect on AIA Document G702, *Application and Certificate for Payment*. The completed form contains the name and address of the Contractor. Payment should not be made to any other party unless specifically indicated on this form.

CERTIFICATE OF SUBSTANTIAL COMPLETION

AIA DOCUMENT G704

Distribution to:
OWNER ☐
ARCHITECT ☐
CONTRACTOR ☐
FIELD ☐
OTHER ☐

PROJECT:
(name, address)

ARCHITECT:

ARCHITECT'S PROJECT NUMBER:

TO (Owner):

CONTRACTOR:

CONTRACT FOR:

CONTRACT DATE:

DATE OF ISSUANCE:

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.)

Part II
Division 1

General Requirement

SECTION 01001

BASIC REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Summary of Work: Contract, work by owner, contractor use of premises, future work.

B. Contract Considerations: Cash allowances, contingency allowance, inspection and testing allowances, schedule of values, applications for payment, change procedures, alternates.

C. Coordination and Meetings: Coordination, field engineering, cutting and patching, meetings, progress meetings, equipment electrical characteristics and components, examination, preparation, cutting and patching.

D. Submittals: Submittal procedures, construction progress schedules, proposed products list, shop drawings, product data, samples, manufacturers' installation instructions, manufacturers' certificates.

E. Quality Control: Quality assurance - control of installation, Tolerances, References, Mock-ups, Inspection and testing laboratory services, Manufacturers' field services and reports.

F. Construction Facilities and Temporary Controls: Temporary electricity, temporary lighting for construction purposes, temporary heat, temporary ventilation, telephone service, temporary water service, temporary sanitary facilities, barriers and fencing, water control, exterior enclosures, interior enclosures, protection of installed work, security, access roads, parking, progress cleaning and waste removal, project identification, field offices and sheds, removal of utilities, facilities, and controls.

G. Material and Equipment: Products, transportation, handling, storage, and protection, products options, substitutions.

H. Starting of Systems: Starting systems, demonstration and instructions, testing, adjusting and balancing.

I. Contract Closeout: Contract closeout procedures, final cleaning, adjusting, project record documents, operation and maintenance data, spare parts and maintenance materials, warranties.

1.2 WORK BY OWNER

A. Items noted as NIC (Not in Contract), will be furnished and installed by Owner beginning at Substantial Completion.

1.3 CONTRACTOR USE OF PREMISES

A. Limit use of premises to allow:
   1. Owner occupancy.
   2. Work by others and work by owner.
   3. Use of premises by public and tenants as required.

1.4 SCHEDULE OF VALUES

A. Submit schedule on AIA Form G703. Contractor's standard form, similar electronic media printout will be considered.

B. Submit Schedule of Values at time of bid submission.

1.5 APPLICATIONS FOR PAYMENT

A. Submit five copies of each application on AIA Form G702 and G703, similar electronic media printout will be considered.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Payment Period: Monthly. Requisition to be submitted 10 days prior to on-site requisition meeting for payment approximately 10 days following. Specific requisition dates and payment time frame to be determined at preconstruction meeting.

1.6 CASH ALLOWANCES:

A. N/A

1.7 TESTING AND INSPECTION ALLOWANCES – Not Applicable

1.8 CHANGE PROCEDURES

A. Stipulated Sum Change Order: Based on Proposal Request with General Contractor profit and overhead delineated and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect/Engineer.

B. Change Order Forms: AIA G701, similar electronic media printout will be considered.

C. Change Orders must be approved by the building Owner, Contractor and Architect prior to proceeding with the work.

1.9 ALTERNATES

A. Alternates quoted on Bid Forms shall be deductive in nature and shall be included as part of the Base Bid for the project.

B. Coordinate related Work and modify surrounding Work as required.

C. Alternates Schedule: n/a

1.10 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements. No claims for additional Time will be considered if the Work has not been properly coordinated.

B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.

C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable.

D. In finished areas, conceal pipes, ducts, and wiring within the construction.

1.11 FIELD ENGINEERING

A. Employ a Land Surveyor to locate a reference datum and protect survey control and reference points.

B. Establish elevations, lines, and levels and certify that elevations and locations of the Work conform with the Contract Documents.

C. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

1.12 PRECONSTRUCTION PREINSTALLATION MEETINGS

A. Owner will schedule a preconstruction meeting for all affected parties.

B. When required in individual specification section, convene a preinstallation meeting at Project site prior to commencing work of the section.

1.13 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum bi-monthly intervals.

B. Preside at meetings, record minutes, and distribute copies within two days to those affected by decisions made.

C. Refer to Section 01200 for additional information.

1.14 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Motors: NEMA MG1 Type; specific motor type is specified in individual specification sections.

B. Wiring Terminations: Terminal lugs to match branch circuit conductor; size terminal lugs to NFPA 70.

C. Cord and Plug: Minimum 6 foot cord and plug including grounding connector; cord of longer length is specified in individual sections.

1.15 CUTTING AND PATCHING

A. Employ original installer to perform cutting and patching new Work; restore Work with new Products.

B. Submit written request in advance of cutting or altering structural or building enclosure elements.

C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Cut masonry and concrete materials using masonry saw or core drill. Restore Work with new Products in accordance with requirements of Contract Documents.

E. Cut from finished side of surfaces to concealed side.

F. Protect existing construction from damage during cutting and patching.

G. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

H. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. Refinish surfaces to match adjacent finishes in a manner that will eliminate evidence of patching and refinishing. Extend refinishing to entire contiguous surface where necessary to eliminate evidence of patching.

J. Refer to Section 01300 for additional information.

1.16 SUBMITTAL PROCEDURES

A. Submittal form to identify Project, Contractor, Subcontractor or supplier; and pertinent Contract Document references.

B. Submittals to Architect shall consist of two prints and one sepia if larger than 11"X17" and 3 copies if 11"X17" or smaller, plus the number of copies needed by Contractor for distribution. Submittals will be reviewed by Architect/Engineer and sepia will be marked and returned for printing of distribution set with architect's/engineer's comments included.

C. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

D. Identify variations from Contract Documents and Product or system limitations, which may be detrimental to successful performance of the completed Work.

E. Revise and resubmit submittals as required; identify all changes made since previous submittal.

F. Distribute submittals reviewed by Architect/Engineer to project site and all affected parties.

G. Allow 15 working days for review and return of submittals or resubmittals by Architect. Schedule submittals with adequate time for review by Architect before products need to be ordered.

H. Do not allow submittals requiring Architect/Engineer's action stamp to be used on the project site without marking.

I. Architect/Engineer's action stamp is self-explanatory. Architect/Engineer's review is only for conformance with design intent. Approval does not:

1. Indicate approval of assembly in which the item functions.
2. Relieve Contractor of responsibility for any deviations from requirements of Contract Documents.
3. Relieve Contractor from responsibility for errors, omissions, coordination or verification of dimensions
4. Authorize changes to contract sum or contract time.

1.17 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within 15 days after date of Owner-Contractor Agreement for Architect/Engineer review.

B. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.

C. Submit a horizontal bar chart with separate line for each major section of Work or operation, identifying first workday of each week.

1.18 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Owner-Contractor Agreement, submit list of major Products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.19 PROPOSED SUBCONTRACTOR/SUPPLIER LIST

A. Within 15 days after date of Owner-Contractor Agreement, submit list of major subcontractors/suppliers proposed, with indication of trade/product type.

1.20 PRODUCT DATA

A. Product Data For Review:

1. Submitted to Architect/Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in CONTRACT CLOSEOUT.

B. Product Data For Information:

1. Submitted for the Architect/Engineer's benefit as contract administrator or for the Owner.

C. Product Data For Project Close-out:

1. Submitted for the Owner's benefit during and after project completion.

D. Submit the number of copies which the Contractor requires, plus three copies which will be retained by the Architect/Engineer.

E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this project.

F. Refer to Section 01340 for additional information.

1.21 SHOP DRAWINGS

A. Shop Drawings For Review:

1. Submitted to Architect/Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

2. After review, produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article above and for record documents purposes described in CONTRACT CLOSEOUT.

B. Shop Drawings For Information:
1. Submitted for the Architect/Engineer's benefit as contract administrator or for the Owner.

C. Shop Drawings For Project Close-out:
1. Submitted for the Owner's benefit during and after project completion.

D. Submit the number of opaque reproductions which Contractor requires, plus three copies which will be retained by Architect/Engineer.

E. Refer to Section 01340 for additional information.

1.22 SAMPLES

A. Samples For Review:

1. Submitted to Architect/Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

2. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in CONTRACT CLOSEOUT.

B. Samples For Information:

1. Submitted for the Architect/Engineer's benefit as contract administrator or for the Owner.

C. Samples For Selection:

1. Submitted to Architect/Engineer for aesthetic, color, or finish selection.

2. Submit samples of finishes from the full range of manufacturers' standard colors, in custom colors selected, textures, and patterns for Architect/Engineer selection.

3. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in CONTRACT CLOSEOUT.

D. Submit samples to illustrate functional and aesthetic characteristics of the Product.

E. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect/Engineer's selection.

1.23 MANUFACTURER INSTALLATION INSTRUCTIONS

A. When specified in individual specification sections, submit manufacturer printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

1.24 MANUFACTURER CERTIFICATES

A. When specified in individual specification sections, submit certifications by manufacturer to Architect/Engineer, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.25 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions.

C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.26 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions and responsibility for outcome.

B. Verify that utility services are available, of the correct characteristics, and in the correct location.

1.27 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

1.28 TOLERANCES

A. Monitor fabrication and installation tolerance control of installed Products over suppliers, manufacturers, Products, site conditions, and workmanship, to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply fully with manufacturers' tolerances unless more stringent tolerances are specified.

1.29 REFERENCES

A. Conform to reference standards by date of issue current as of date of Contract Documents. .

B. Should specified reference standard conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

C. Reference Standards have the same force and effect as if bound herein and include publications of the following:

1. American National Standards Institute (ANSI).
2. American Concrete Institute (ACI).
3. American Institute of Steel Construction (AISC).
4. American Plywood Association (APA).
5. American Society for Testing and Materials (ASTM).
6. American Society of Civil Engineers (ASCE).
7. American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. (ASHRAE).
8. American Society of Mechanical Engineers (ASME).
9. Americans with Disabilities Act (ADA).
10. American Water Works Association (AWWA).
11. American Welding Society (AWS).
12. Building Officials and Code Administrators International Inc. (BOCA).
13. Consumer Product Safety Commission (CSPC).
14. Factory Mutual (FM).
15. National Electric Manufacturers Association (NEMA).
16. National Fire Protection Association (NFPA).
17. Underwriters Laboratories, Inc. (UL).
18. US Department of Commerce, National Bureau of Standards (NBS).
19. Federal, State and local codes and regulations.
20. Maine State Housing Authority (MSHA) Supplemental Construction Standards

1.30 MOCK-UPS

A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.

B. Accepted mock-ups are representative of quality required for the Work.

C. Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.31 TESTING AND INSPECTION LABORATORY SERVICES

A. Contractor will employ services of independent firm to perform testing and inspection. Pay for services from specified Cash Allowance.

B. Independent firm will perform tests, inspections, and other services as required.

C. Cooperate with independent firm; furnish samples as requested.

D. Re-testing required because of non-conformance to specified requirements will be charged to Contractor.

E. Refer to Section 01410 for additional information.

1.32 CORRELATION AND INTENT

A. Contract Documents are complementary, and elements of the Work required by one shall be as binding as if required by all. The intent of the Documents is to include all items necessary for the proper execution and completion of the Work.

B. Where discrepancies or conflicting requirements exist among the Contract Documents and/or applicable reference standards, the Contractor shall assume the greater quantity or quality level, normally the most costly. Refer conflicting requirements to the Architect/Engineer for interpretation before proceeding.

C. Refer to Section 01410 for additional information.

1.33 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, to initiate instructions and conduct warranty inspections when necessary.

B. Report observations and site decisions or instructions that are supplemental or contrary to manufacturers' written instructions.

1.34 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify utility services are available, of correct characteristics, and in correct location.

1.35 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Apply manufacturer's required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

C. By commencing installation work, Contractor shall assume full responsibility for substrate conditions.

1.36 TEMPORARY FACILITIES AND CONTROLS

A. Refer to Section 01500 for additional information.

1.37 TEMPORARY ELECTRICITY

A. Cost: Contractor will be allowed to connect to existing electrical services, but must arrange and pay for metering and power used in execution of the Work.

B. Provide temporary electricity and power outlets for construction operations, connections, branch wiring, distribution boxes, and flexible power cords as required. Do not disrupt Owner's need for continuous service.

1.38 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

C. Provide and maintain temporary lighting for construction operations.

D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

E. Permanent building lighting may not be utilized during construction. Repair, clean, and replace lamps to achieve new condition at end of construction.

1.39 TEMPORARY HEAT

A. Provide heating devices with temporary units and heat as needed to maintain specified conditions for construction operations.

B. Pay cost of energy used.

C. Provide and pay for operation as per manufacturers recommended procedures, maintenance, and regular replacement of filters and worn or consumed parts.

D. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

1.40 TEMPORARY VENTILATION

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.41 TELEPHONE SERVICE

A. Provide, maintain and pay for telephone and telephone facsimile service to field office at time of project mobilization. Allow Owner, Architect/Engineer and inspecting authorities incidental use.

1.42 TEMPORARY WATER SERVICE

A. Contractor will be allowed to connect to existing water services, but must arrange for metering, maintain and pay for suitable quality water service required for construction operations.

1.43 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. New or existing building facilities may not be used.

B. Maintain in clean and sanitary condition.

1.44 BARRIERS AND FENCING

A. Provide barriers and/or fencing to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage.

B. Construction: Contractor's option, as allowed by authorities having jurisdiction.

1.45 WATER CONTROL

A. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Provide erosion control in accordance with environmental regulations and approvals.

1.46 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closures to exterior openings to permit acceptable working conditions and protection of the Work.

1.47 PROTECTING INSTALLED CONSTRUCTION

A. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

B. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

C. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

D. Prohibit traffic from landscaped areas.

E. Protect personal property of Owner and tenants.

1.48 SECURITY

A. Provide security and facilities to protect Work and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. Provide measures to protect Owner's personnel, tenants and the public from physical harm at all times.

1.49 POLLUTION AND ENVIRONMENTAL CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

B. Provide dust control, erosion and sediment controls, noise control, pest control and rodent control to allow for proper execution of the Work.

1.50 ACCESS ROADS

A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.

1.51 PARKING

A. Arrange for temporary parking areas to accommodate construction personnel.

1.52 PROGRESS CLEANING AND WASTE REMOVAL

A. Collect and maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

1.53 PROJECT IDENTIFICATION

A. Provide an 8 foot wide x 4 foot high project sign of exterior grade plywood and wood frame construction, painted, to Architect/Engineer's design and colors.

B. Erect on site at location established by Architect/Engineer.

1.54 FIELD OFFICES AND SHEDS

A. Office: Weather tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

1.55 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials, prior to Substantial Completion review.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.56 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.

B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by the Contract Documents.

C. Provide interchangeable components of the same manufacture for components being replaced.

D. Provide Products of the same type from the same manufacturer.

1.57 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

A. Transport, handle, store, and protect Products in accordance with manufacturer's instructions.

1.58 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions (or equal clause): Submit a request for substitution for any manufacturer not named.

1.59 SUBSTITUTIONS

A. Architect/Engineer will consider requests for Substitutions only within 15 days after date of Owner-Contractor Agreement. .

B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

C. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

D. Conditions: Substitutions will be considered under the following conditions:

1. Revisions to the Contract Documents are not required.
2. Proposed changes are in keeping with the intent of the Contract Documents.
3. The specified product or construction method cannot be provided within the Contract Time, if not due to failure by the Contractor to pursue the work promptly.
4. The specified product or construction method cannot receive approval by governing authorities, and the substitution can be approved.
5. A substantial advantage is offered to the Owner in terms of cost, time or maintenance.
6. The specified product or construction method is not compatible with other materials, and the substitution is compatible.
7. The specified product or construction method cannot receive a required warranty, and the substitution can be warranted.
8. The Contractor will bear the impact of additional cost or time needed to provide the substitution, including design services.
9. The Contractor will be responsible for coordinating the substitution with other Work.

1.60 STARTING SYSTEMS

A. Provide seven days notification prior to start-up of each item.

B. Ensure that each piece of equipment or system is ready for operation.

C. Execute start-up under supervision of responsible persons in accordance with manufacturers' instructions.

D. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.61 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion. .

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

1.62 TESTING, ADJUSTING, AND BALANCING

A. Contractor will appoint, employ, and pay for services of an independent firm to perform testing, adjusting, and balancing.

B. Reports will be submitted by the independent firm to the Architect/Engineer indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

C. Cooperate with independent firm; furnish assistance as requested.

D. Re-testing required because of non-conformance to specified requirements will be charged to the Contractor.

1.63 CONTRACT CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's inspection.

B. Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

1.64 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Thoroughly clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces, wash and polish glass, reflective and smooth hard surfaces.

C. Clean debris from site, roofs, gutters, downspouts, and drainage systems.

D. Replace filters of operating equipment.

E. Replace lamps in light fixtures that have been used during construction.

F. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.65 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.66 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of Contract Documents to be utilized for record documents.

B. Record actual revisions to the Work. Record information concurrent with construction progress.

C. Specifications: Legibly mark and record at each Product section a description of actual Products installed.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.

E. Submit original and two photocopies of record documents to Owner with claim for final Application for Payment.

1.67 OPERATION AND MAINTENANCE DATA

A. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three D side ring binders with durable covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.

C. Internally subdivide the binder contents with permanent page dividers, logically organized, with tab titles clearly printed under reinforced laminated plastic tabs.

1.68 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed obtain receipt prior to final payment.

1.69 WARRANTIES

A. Provide duplicate notarized copies.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Submit prior to final Application for Payment.

...END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

1.3 SCHEDULE OF VALUES

A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

B. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:

1. Contractor's construction schedule.
2. Application for Payment form.
3. List of subcontractors.
4. Schedule of allowances.
5. Schedule of submittals.

C. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.

D. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.

E. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.

F. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials and for total installed value of that part of the Work.

1.4 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.

B. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

C. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement.

D. Payment Application Forms: Use AIA G 702/3 as the form for Application for Payment. Comparable electronic forms may be used subject to review by Architect and Owner.

E. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Contractor. Incomplete applications will be returned without action.

1. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

F. Transmittal: Submit 3 executed copies of each Application for Payment to the Architect by means ensuring receipt within 24 hours; one copy shall be complete, including waivers of lien and similar attachments, when required.

G. Waivers of Mechanics Lien: With each Application for Payment submit waivers of mechanics liens from subcontractors or 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.

H. Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the application.

I. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of Work covered by the application who could lawfully be entitled to a lien.

J. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

K. 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. Contractor's Construction Schedule (preliminary if not final).
5. Submittal Schedule (preliminary if not final).
6. List of Contractor's staff assignments.
7. Copies of building permits
8. Copies of authorizations and licenses from governing authorities for performance of the Work.
9. Certificates of insurance and insurance policies.
10. Performance and payment bonds.

L. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

M. Administrative actions and submittals that shall proceed or coincide with this application include:

1. Occupancy permits and similar approvals.
2. Warranties (guarantees) and maintenance agreements.
3. Test/adjust/balance records.
4. Maintenance instructions.
5. Meter readings.
6. Start-up performance reports.
7. Change-over information related to Owner's occupancy, use, operation and maintenance.
8. Final cleaning.
9. Application for reduction of retainage, and consent of surety.
10. Advice on shifting insurance coverages.
11. Final progress photographs.
12. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

N. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Assurance that unsettled claims will be settled.
4. Assurance that Work not complete and accepted will be completed without undue delay.
5. Transmittal of required Project construction records to Owner.
6. Removal of temporary facilities and services.
7. Removal of surplus materials, rubbish and similar elements.
8. Change of door locks to Owner's access.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

...END OF SECTION

SECTION 01070

ABBREVIATIONS & DEFINITIONS

PART 1 GENERAL

1.1 INTERPRETATIONS

A. This section is not intended to cover all definitions which may be required, nor all the abbreviations which may be used on the Contract Documents.

B. Questions regarding definition of terms, or meaning of abbreviations should be directed to the Architect.

1.2 DEFINITIONS

A. The following definitions shall apply to the Specifications:

1. The words "Furnish" or "Supply" means purchase and delivery of items or materials to the project site, including proper storage without installation.

2. The word "Install" means applications, connection or erection of items or materials that have been furnished.

3. The word "Provide" means both furnishing and supplying and installing of items or materials.

4. The term "Work" as used herein refers to work at site of project and includes all labor and materials to be incorporated in the construction.

5. The word "Concealed" means work within or behind various construction elements, or in crawl spaces or trenches, which is not exposed to view when the project is complete.

6. The word "Exposed" means anything exposed to view when the project is complete, as opposed to being "concealed."

1.3 ABBREVIATIONS

A. The following list of abbreviations shall apply to the Drawings and Specifications. This list is not an inclusive. Other abbreviations may exist on the drawings. If any questions arise regarding abbreviations, contact the Architect for interpretation.

A/B	Acid, Bicarb Tubing
ABV	Above
AC	Air Conditioning
ACT	Acoustical Tile
ADD	Addendum
ADJ	Adjacent
ADJT	Adjustable
AFF	Above Finished Floor
ALT	Alternate
ALUM	Aluminum
APPROX	Approximate

APX	Approximate
ARCH	Architect(ural)
AUTO	Automatic
BD	Board
BEL	Below
BET	Between
BIT	Bituminous
BK	Brick
BLK	Block
BLKG	Blocking
BOT	Bottom
BRG	Bearing
BRK	Brick
BSMT	Basement
CAB	Cabinet
CG	Corner Guard
CIPC	Cast-in-Place Concrete
CJ	Control Joint
CJT	Control Joint
CL	Clear
CLG	Ceiling
CMU	Concrete Masonry Unit
CO	Cased Opening
COL	Column
CONC	Concrete
CONC.	Concentrate Fluid
CPT	Carpet
CRS	Course
CSC	Concealed Spline Ceiling
CT	Ceramic Tile
CTSK	Countersunk Screw
CW	City Water
DC	Dialysate Concentrate
DET	Detail
DF	Dialysis Fluid
DI	Delonized Water
DIM	Dimension
DISP	Disposal
DISPEN	Dispenser
DO	Door Opening
DPL	Disposal
DPR	Dispenser
DR	Door
DW	Drywall
DWG	Drawing
DWR	Drawer
ELEC	Electrical
EMER	Emergency
EMR	Existing Material to Remove
EQ	Equal
EQUIP	Equipment
EXG	Existing

EXIST	Existing
EXT	Exterior
FCO	Floor Clean Out
FD	Floor Drain
FE	Fire Extinguisher
FEC	Fire Extinguisher Cabinet
FIN	Finish(ed)
FIXT	Fixture
FL	Floor
FLR	Floor(ing)
FLUR	Fluorescent
FP	Fixed Panel
FS	Floor Sink
GA	Gage, Gauge
GL	Glass
GV	Galvanized
GWB	Gypsum Wall Board
H	High
HP	Handicapped
HR	Hour
HT	Height
HVAC	Heating-Ventilating-Air-Conditioning
HW	HW Hot Water
HWR	Hot Water Return
ID	Inside Diameter
INS	Insulate (d), (ion)
INT	Interior
IW	Indirect Waste
IWV	Indirect Waste Vent
JT	Joint
LAM	Laminate
LAV	Lavatory
LT	Light
MAS	Masonry
MAX	Maximum
MECH	Mechanical
MT	Metal
MIN	Minimum
MISC	Miscellaneous
MO	Masonry Opening
MOV	Moveable
MRGB	Moisture Resistant Gypsum Wallboard
NIC	Not in Contract
NO	Number
NS	Nurses Station
NTS	Not to Scale

OA	Overall
OC	On Center
OF	Owner Furnished
OFI	Owner Furnished and Installed
OFIC	Owner Finished Installed by Contractor
OH	Opposite Hand
OPG	Opening
OPNG	Opening
PAT	Patient
PL	Plate
PLAM	Plastic Laminate
PLAS	Plaster
PLYWD	Plywood
PNL	Panel
PSTA	Patient Station
PTD	Paper Towel Dispenser
PTN	Partition
PTR	Paper Towel Dispenser
PVC	Poly. Vinyl Chloride
PWD	Plywood
R	Rubber
RA	Return Air
RB	Rubber Base
REF	Refrigerator
REFR	Refrigerator
REFRIG	Refrigerator
RM	Room
REMOV	Removable
RO	Reverse Osmosis (water)
RP	Removable Panel
SDS	Solution Delivery System
SHT	Sheet
SIM	Similar
SL	Sliding
SQ	Square
SR	Sheet Rubber
SST	Stainless Steel
ST	Steel
STA	Station
STD	Standard
STL	Steel
STR	Structural
STRUCT	Structural
STUC	Stucco
SUS	Suspended
THK	Thick(ness)
TKBD	Tackboard
TPD	Toilet Paper Dispenser
TYP	Typical
V	Vinyl
VCT	Vinyl Composition Tile

VERT	Vertical
VWC	Vinyl Wall Covering
WC	Water Closet
WCO	Water Closet Clean Out
WD	Wood
WDP	Wood Panel on Gypsum Wallboard
WIN	Window
WO	Window Opening

...END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES:

A. Contractor's Responsibilities:

1. Schedule and administer meetings throughout duration of work.

2. Prepare agenda for meetings.

3. Distribute written notice of each meeting seven working days in advance of meeting date.

4. Make physical arrangements for meetings.

5. Preside at meetings.

6. Record the minutes; include all significant proceedings and decisions.

7. Reproduce and distribute copies of minutes within three working days after each meeting.

8. Provide one copy to:

a. All participants in the meeting, including the Architect.
b. All parties affected by decisions made at the meeting.

B. Participants:

1. Qualified representative of Contractors, Subcontractors, and Suppliers authorized to act on behalf of the parties they represent.

2. Owner's Representative at their option.

1.2 PRE-CONSTRUCTION MEETING

A. Schedule meeting within the early stages of Construction as determined by the General Contractor.

B. Suggested agenda: Prepare written material, distribute lists, and discuss the following:

1. Identification of major Subcontractors and Suppliers

2. Projected construction schedules.

3. Critical work sequencing

4. Major equipment deliveries and priorities

5. Project coordination, including designation of responsible person.

6. Procedures for, and processing of:

   a. Field decisions.
   b. Proposal requests.
   c. Submittals
   d. Change orders.
   e. Applications for payments.

7. Adequacy of distribution of Contract Documents.

8. Procedures for Maintaining Record Documents

9. Use of premises:

   a. Office, work, and storage areas.
   b. Owner's requirements.

10. Construction facilities, construction aids, and controls.

11. Temporary utilities.

12. Safety and first aid procedures.

13. Security procedures.

14. Housekeeping procedures.

15. Working days/hours.

1.3 PROGRESS MEETINGS

A. Schedule regular monthly meetings and as necessary, schedule additional meetings.

B. Suggested Agenda:

1. Review and approval of minutes of previous meeting.

2. Review of work progress since previous meeting.

3. Field observations, problems, and conflicts.

4. Problems which impede construction schedule.

5. Review of off-site fabrication, delivery schedules.

6. Corrective measures and procedures required to regain projected schedule.

7. Revisions to construction schedule.

8. Plan progress and schedule for succeeding work period.

9. Coordination of schedules.

10. Review submittal schedules; expedite as required.

11. Maintenance of quality standards

12. Review proposed changes for:

    a. Effect on construction schedule and on completion date.
    b. Effect on other contracts of the Project.

13. Other business.

1.4 PRE-INSTALLATION

A. When required in individual Specification Section, schedule a pre-installation meeting at the job-site prior to starting the work of the Section.

B. Require attendance of entities directly affecting, or affected by, the work of the Section.

C. Notify Owner's Project Manager two weeks in advance of meeting date.

...END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;

1. Contractor's construction schedule.
2. Submittal schedule.
3. Shop Drawings.
4. Product Data.
5. Samples.

B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Permits.
2. Applications for payment.
3. Performance and payment bonds.
4. Insurance certificates.
5. List of Subcontractors.

1.3 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.

B. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

C. 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.

D. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

1. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals.

2. If an intermediate submittal is necessary, process the same as the initial submittal.

3. Allow two weeks for reprocessing each submittal.

E. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

F. 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.

G. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Submittals received from sources other than the Contractor will be returned without action.

1. Record on the transmittal relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. CPM-Chart Schedule: Prepare a fully developed, horizontal critical path-type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".

B. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals.

B. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.

C. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction.

D. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.6 SHOP DRAWINGS

A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. 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 considered Shop Drawings.

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.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.

C. Initial Submittal:
1. Steel Shop Drawings: Submit (2) blue- or black-line prints and (1) reproducable print for the Architect's review. The (2) black line prints will be retained and the reproducable will be returned.
2. All other shop drawings: Submit (7) complete packages. (3) or (4) will be retained, while the remainder will be returned to the contractor.

D. Final Submittal: Submit 3 blue- or black-line prints and additional prints as required for maintenance manuals, plus the number of prints needed by the Contractor for distribution. 2 prints will be retained; the remainder returned.

1. One of the prints returned shall be marked-up and maintained as a "Record Document".

E. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

F. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.

G. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.7 PRODUCT DATA

A. Collect Product Data into a single submittal for each element or system of construction. 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. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

B. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

1. Manufacturer's printed recommendations.
2. Compliance with recognized trade association standards.
3. Compliance with recognized testing agency standards.
4. Application of testing agency labels and seals.
5. Notation of dimensions verified by field measurement.
6. Notation of coordination requirements.

C. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

E. Submittals: Submit 5 copies of each required submittal; submit additional copies as required for maintenance manuals. The Architect will retain one, and will return others marked with action taken and corrections or modifications required.

F. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

G. 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.

H. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.

I. Do not permit use of unmarked copies of Product Data in connection with construction.

1.8 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.

B. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Include the following:

1. Generic description of the Sample.
2. Sample source.
3. Product name or name of manufacturer.
4. Compliance with recognized standards.
5. Availability and delivery time.

C. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

D. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.

E. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.

F. 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.

G. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.

H. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.

I. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 2 sets; one will be returned marked with the action taken.

J. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.

K. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

L. Sample sets may be used to obtain final acceptance of the construction associated with each set.

M. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

N. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.

O. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.9 SUBSTITUTIONS

A. Approval required:

1. The Contract is based on the standards of quality established in the Contract Documents.

2. All products proposed for use, including those specified by required attributes and performance, require approval by the Architect before being incorporated into the Work.

3. Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this Work by the Architect.

B. "Or equal":

1. Where the phrase "or equal" or "or equal as approved by the Architect" occurs in the Contract Documents, do not assume that materials, equipment or methods will be approved as equal unless the items have been specifically approved for this Work by the Architect.

2. Substitutions shall be judged against the specified item for quality, durability, operation, appearance, and other applicable qualities including fitness for use in this situation. The decision of the Architect is final.

1.10 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.

B. Compliance with characteristics specified in the Contract Documents is the Contractor's responsibility. Approval by the Architect of a submittal that contains deviations from the Contract Documents does not relieve the Contractor of the responsibility of coordinating the deviation with other aspects of the Work, or the cost of making modifications to other aspects of the work to accommodate the deviation.

C. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp.

D. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.

E. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".

PART 2 PRODUCTS (Not Applicable).

PART 3 EXECUTION

3.1 SUBMISSION REQUIREMENTS

A. Schedule submissions at least two weeks before date reviewed submittals will be needed.

B. Accompany submittals with transmittal letters containing the date, project title, Contractor's name and address, number of each shop drawing, product data and samples submitted, and notification of deviation from Contract Documents.

1. Material Safety Data Sheet: Contractor shall furnish to the Architect, for review, for (4) copies of Material Safety Data Sheets (MSDS) for all products as specified or required. Allow ample time for Architect's comment and review. Do not install products until confirmation of review is obtained. MSDS copies should be included at the same submittal with shop drawings or product submittal. The following products must include the MSDS copy with the shop drawing or submittal:

   a. Mechanical Insulation
   b. Mastic or Adhesive
   c. Ceiling Tiles or other Composite Materials
   d. Sealants or Caulking
   e. Materials containing or releasing volatile organic compounds (VOC's)
   f. Paints, Varnishes, Stains or other similar coatings

2. Flame Spread Certificates: Contractor shall furnish to the Architect, for review, four (4) copies of Flame Spread Certificates for all products as specified or required. Allow ample time for Architect's comment and review. Do not install products until confirmation of review is obtained. Flame Spread Certificate copies should be included at the same submittal with shop drawings or product submittal. The following products must include the Flame Spread Certificate copy with the shop drawing or submittal:

a. Carpet
b. Wallcovering
c. Fabrics
d. Cubicle curtains

3.2 RESUBMISSION REQUIREMENTS

A. Shop Drawings: Revise initial drawings as required and resubmit as specified for initial submittals. Clearly identify on drawings any changes which have been made other than those requested by the Architect.

B. Product Data and Samples: Submit new datum and samples as required for initial submittal.

3.3 DISTRIBUTION OF SHOP DRAWINGS AND SUBMITTALS

A. Contractor is still responsible for obtaining and distributing prints of shop drawings as necessary after as well as before final approval and for coordination of submittals between his subcontractors and suppliers.

B. Make prints of approved shop drawings from sepia transparencies which carry the Architect's appropriate stamp.

C. The cost of printing sepias and prints is the responsibility of the Contractor.

...END OF SECTION

SECTION 01340

SHOP DRAWINGS & PRODUCT DATA AND SAMPLES

PART 1 GENERAL

1.1 GENERAL CONDITIONS

A. Refer to paragraphs 1.2.12, and 4.2 and 3.12 of the General Conditions.

B. In the event of conflict between requirements of the General Conditions and this Section covering shop drawings, product data and samples, the requirements of Section 01340 shall govern. Unaltered provisions remain in effect.

1.2 DESCRIPTION

A. Submit to the Architect shop drawings, product data and samples required by specification sections.

B. Prepare and submit the Construction Schedule, a separate schedule listing dates for submission and dates reviewed shop drawings, product data and samples will be needed for each product.

PART 2 PRODUCTS

2.1 SHOP DRAWINGS

A. Submit one reproducible sepia transparency and three prints of each drawing and, in addition, one reproducible sepia transparency of certain trade shop drawings requested by Architect. Include fabrication, erection, layout and setting drawings and other such drawings as required under various sections of the specifications until final approval is obtained. Reproduction of Contract Drawings will not be used for Shop Drawings.

B. Date and mark shop drawings to show name of the Project, the Architect, Contractor, originating Subcontractor, Manufacturer or Supplier, and separate details as pertinent.

C. Completely identify on shop drawings specification section and locations at which materials or equipment are to be installed.

2.2 PRODUCT DATA

A. Submit sufficient copies of manufacturers descriptive data including catalog sheets for materials, equipment and fixtures, showing dimensions, performance characteristics and capacities, wiring diagram and controls, schedule and other pertinent information as required.

B. Submit brochures and other submittal data that cannot be reproduced economically in such quantities as to allow the Architect to retain two (2) copies of each after review. Mark product data to show the name of the Project, Architect, Contractor, originating Subcontractor, Manufacturer or Supplier, and separate details if pertinent.

C. Completely identify on product data specification section and location at which materials or equipment are to be installed.

D. Clearly mark to show pertinent data applicable to the Project.

2.3 SAMPLES

A. Submit physical examples of materials in duplicate when required by specification sections to illustrate materials, workmanship or to establish standards by which completed work shall be judged.

B. Date samples and mark to show the name of the project, Architect, Contractor, originating Subcontractor, Manufacturer or Supplier and separate details if pertinent.

C. Completely identify on samples specification section and location in which materials or equipment are to be installed.

2.4 CONTRACTOR RESPONSIBILITIES

A. Review shop drawings, product data and samples prior to submission to the Architect.

B. Include on submittals the Contractor's stamp, initialed or signed, certifying review of submittals, verification of field dimensions and compliance with Contract Documents. Shop drawings, product data and samples not so stamped, and checked and approved by the Contractor will not be reviewed by the Architect, but will be returned to the Contractor. Shop drawings stamped and signed as approved by the Contractor but showing evidence that they have not been carefully checked by the Contractor may be returned to the Contractor to be re-checked and re-submitted to the Architect.

2.5 SUBSTITUTIONS

A. Approval required:

1. The Contract is based on the standards of quality established in the Contract Documents.

2. All products proposed for use, including those specified by required attributes and performance, require approval by the Architect before being incorporated into the Work.

3. Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this Work by the Architect.

B. "Or equal":

1. Where the phrase "or equal" or "or equal as approved by the Architect" occurs in the Contract Documents, do not assume that materials, equipment or methods will be approved as equal unless the items have been specifically approved for this Work by the Architect.

2. Substitutions shall be judged against the specified item for quality, durability, operation, appearance, and other applicable qualities including fitness for use in this situation. The decision of the Architect is final.

PART 3 EXECUTION

3.1 SUBMISSION REQUIREMENTS

A. Schedule submissions at least two weeks before date reviewed submittals will be needed.

B. Accompany submittals with transmittal letters containing the date, project title, Contractor's name and address, number of each shop drawing, product data and samples submitted, and notification of deviation from Contract Documents.

1. Material Safety Data Sheet: Contractor shall furnish to the Architect, for review, for (4) copies of Material Safety Data Sheets (MSDS) for all products as specified or required. Allow ample time for Architect's comment and review. Do not install products until confirmation of review is obtained. MSDS copies should be included at the same submittal with shop drawings or product submittal. The following products must include the MSDS copy with the shop drawing or submittal:

a. Mechanical Insulation
b. Mastic or Adhesive
c. Ceiling Tiles or other Composite Materials
d. Sealants or Caulking
e. Materials containing or releasing volatile organic compounds (VOC's)
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a. Carpet
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3.2 RESUBMISSION REQUIREMENTS

A. Shop Drawings: Revise initial drawings as required and resubmit as specified for initial submittals. Clearly identify on drawings any changes which have been made other than those requested by the Architect.

B. Product Data and Samples: Submit new datum and samples as required for initial submittal.

3.3 DISTRIBUTION OF SHOP DRAWINGS AND SUBMITTALS

A. Contractor is still responsible for obtaining and distributing prints of shop drawings as necessary after as well as before final approval and for coordination of submittals between his subcontractors and suppliers.

B. Make prints of approved shop drawings from sepia transparencies which carry the Architect's appropriate stamp.

C. The cost of printing sepias and prints is the responsibility of the Contractor.

...END OF SECTION 01340

SECTION 01410

TESTING AND INSPECTION

TABLE OF CONTENTS

PART 1 GENERAL

1.1 GENERAL PROVISIONS

A. These specifications for Testing and Inspection are applicable to the Project and the Contract Documents therefore are hereby incorporated into these Specifications.

B. The Testing Agency shall conform to applicable requirements of ASTM E329, and any additional requirements specified herein or in the Contract Documents.

C. Examine the Contract Documents and the Report on Subsurface Investigation and become thoroughly acquainted with the detailed testing and inspection requirements, especially those of the following Sections:

Division 2 - Site Work
Division 3 - Concrete
Division 4 - Masonry
Division 5 - Metal

D. The Testing Agency shall make all necessary arrangements with the Contractor in insuring the presence of the required Inspectors at all Contract Operations specified to be included under the Testing and Inspection Agreement.

E. The Contractor shall notify the Testing Agency a reasonable time in advance (not less than 24 hours) of the time when operations requiring inspection or testing are scheduled to start.

F. Provide necessary personnel, equipment and facilities for tests and inspection. Personnel shall be experienced and competent in their particular specialties.

G. Nothing herein specified permits the Testing Agency to allow the Contractor to deviate from the requirements of the Contract Documents.

H. The Testing Agency shall conduct its work so as not to cause delay in the progress of construction. Any non-compliance with the Contract Documents shall be immediately reported to the Contractor and Architect.

I. The costs of the following tests and inspections shall be accounted for separately.

1. Tests and inspection of materials and workmanship not conforming to Specification requirements.

2. Acceptance tests for materials because of changes in properties or changed sources.

3. Tests and services of inspectors required by a Public Authority.

1.2 TESTING AND INSPECTION

A. The Testing Agency shall maintain and distribute a continuous record of the quality of materials and workmanship under its control, and certify that such materials and workmanship meet the Specification requirements.

B. The Inspection and control shall be performed under the direction of the Architect.

C. The duties of the Testing Agency shall include:

1. Test and certification of materials or components designated to be tested at source, at place of fabrication, or at the job site.

2. Supervision and certification of installation of materials designated to be inspected.

3. Submission of reports:

a. Copies of each report of source and field inspection shall be made and distributed within 3 days. Copies of each report of tests shall be distributed within 2 days of the performance of tests. Results of tests showing non-conformance to specification requirements shall be advised to the Contractor and the Architect by phone on the same day.

b. Distribution of one copy of each report shall be as follows:

(1) Architect (name and address)
(2) Engineer (name and address)
(3) Contractor
(4) Local Building Inspectors, when required by them.

c. All reports shall include accurate and unambiguous descriptions of the source of the materials and their location in the project and a statement whether the work inspected or tested conforms or does not conform to

Contract Documents.

1.3 MATERIALS ACCEPTANCE TESTS

A. To determine that materials to be used on the job meet Specification requirements, the following tests shall be made prior to actual use of materials.

1. Composition, gradation and moisture-density relationships for compacted and ordinary fill materials. One set of tests for each type of material from each source.

2. Review of Contractor's qualification test results for cements and for fine and coarse aggregates for:

a. Normal weight concrete

3. Review of Contractor's qualification test results for masonry unit and masonry prism strengths.

B. Whenever the source or characteristics of materials change or the quality of materials provided indicates lack of compliance with specification requirements, full or partial acceptance tests shall be repeated as directed by the Architect until such materials conform. Cost of such tests and inspection repetitions shall be kept separately.

1.4 CONCRETE MIX DESIGNS

A. The Testing Agency shall review and/or make acceptance tests as specified for concrete design mixes provided by the Contractor.

1. A mix for each specified strength and type of concrete and each admixture or combination of admixtures specified.

2. All materials and design mixtures to be supplied by the Contractor at least five (5) weeks prior to proposed use.

1.5 EARTHWORK

A. Inspection and control shall include:

1. In-place density tests, generally at the rate of 3 tests per lift for compacted fill and 1 test per lift for ordinary fill. Tests for moisture content control of subgrade as required by existing conditions.

2. Inspection of foundation pier excavation, footing bottoms and finished subgrades for bearing capacity and workmanship.

3. Review and make necessary recommendations to insure compliance to specification requirements of all lime or cement stabilization and compaction operations, materials, methods and equipment proposed by the Contractor.

4. Inspection of and necessary adjustment recommendations for fills and subgrade stabilization materials and installation.

1.6 CONCRETE

A. Inspection and control shall, in general, conform to ACI Recommended Practice for Concrete Inspection, ACI 311, and shall include:

1. Inspection of forms and form facing materials for line, grade, tightness, quality of surface, and cleanliness.

2. Inspection of reinforcement for quantity, details, clearances and placement, including proper use of accessories.

3. Inspection of concrete at the mixing plant, consisting of inspeciton of materials for conformance to the approved materials, check of batch quantities for compliance with design mixes and project requirements, recommendations for adjustment of batches for consistency.

4. Inspection of concrete at the job site, including transportation, mixing, placement, protection and curing.

5. Sampling of concrete at site, fabrication of compression test specimens, transportation to laboratory and performing standard compression tests. One set of three (3) specimens shall be made for each 50 cubic yards of concrete placed, but not less than one (1) set for each day's placement for each design mix used.

6. Periodic slump, air content and density tests at the site. These tests shall be made whenever cylinders are taken or whenever field conditions indicate non-compliance with Specification requirements.

7. In addition to the above, the Contractor may direct additional control cylinders to be made, cured and tested to check strengths for shoring or adequacy of curing or cold weather protection. In such instances, the cylinders shall be cured with the concrete in the field under the least advantageous conditions. All work requested by the Contractor or all work required by non-compliance with the Specifications shall be at the Contractor's expense, utilizing the selected Testing Agency.

8. When tests of control specimens fall below the required strength, the Architect may require core specimens to be taken from the concrete which it represents, and tested in accordance with ASTM Methods, at Contractor's expense.

1.7 MASONRY

A. Inspection shall be of a nature as to determine, in general, that the construction and workmanship are in accordance with the Contract Documents, and shall include:

1. Inspection of materials in field for conformance to Specification requirements and adequacy of Contractor's protection measures.

2. Full time inspection of installation of all reinforced masonry.

3. Inspection of reinforcement for quantity, details, clearances and placement.

4. Inspection of grouting to insure that required spaces are properly filled.

5. Compression tests of field samples of mortar and grout at the rate of one set of 5 samples for each 1,000 square feet of wall (but not less than one set for each day's

production).

1.8 STRUCTURAL STEEL, STEEL JOISTS & METAL DECKS

A. Inspection and control shall include:

1. When directed by the Architect, inspection of materials and workmanship at shop to verify effectiveness of Contractor's quality control and conformance to specification requirements.

2. Verification of welder qualifications.

3. Certification that quality and size of all field welds meet specification requirements.

4. Checking bolt installation and certifying that all bolts required are provided and properly tightened.

5. Checking of high-strength bolt tightening tools for accurate performance. Procedure shall be approved by the Architect or Engineer.

6. Inspection of primer paint film thickness and touch-up painting.

7. Inspection (upon delivery to site) of steel joist weld quality and sizes for conformance to Specification requirement.

8. Inspection of steel deck welding in the field.

...END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Provide temporary facilities and controls needed for the work including, but not necessarily limited to:

1. Temporary utilities such as heat, water, electricity, and telephone;
2. Field office for the Contractor's personnel;
3. Sanitary facilities;
4. Enclosures such as tarpaulins, barricades, and canopies;
5. Fire protective measures;
6. Staging and scaffolding.

A. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the work are not part of this Section.
3. Permanent installation and hookup of the various utility lines are described in other Sections.

1.2 PRODUCT HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the work.

PART 2 PRODUCTS

2.1 UTILITIES

A. Temporary Toilet Facilities

1. Provide suitable toilet facilities, conforming with all code requirements, for use by his staff, representatives of the Owner and the Architect, and for all workmen on the job. Keep in neat and sanitary condition and provide reasonable heat during the winter months.

2. Temporary Services
3. Water:

   a. Make all necessary arrangements, with the responsible local authorities, and with the building Owner (if leased space), for all temporary water services for the construction operations as required for his use and the use of all trades.

   b. Obtain and pay for all permits or other sanctions required to furnish temporary water on the job site. The cost of all water use on the job shall be borne by the Contractor.

   c. Make all connections, furnish and install all pipes and fittings, including meter, and remove all temporary materials when this service is no longer required.

   d. Use due care to prevent waste of water, maintain in perfect condition at all times; pipes, hoses, valves, and connections.

   e. Provide adequate drinking water satisfactorily cooled for all workmen on the job; water units shall be strategically located throughout the job.

4. Temporary Electricity:

   a. Make arrangements with local electric company for temporary electric service, pay expenses in connection with installation, operation and removal thereof and pay cost of energy consumed by all trades.

   b. Provide power distribution as required throughout structure 120/208 - volt, 3-phase, 60 cycle, AC. Termination or power distribution shall be one location on each floor or each major wing or section of building. Termination shall be provided complete with circuit breakers, disconnect switches and other electrical devices as required to protect power supply system.

   c. Temporary lighting systems shall be furnished, installed and maintained by Contractor as required to satisfy minimum requirements of safety and security. Temporary lighting to illuminate staging, stockpiles, trenches, projections, etc., to the satisfaction of the Architect and general illumination throughout, adequate for watchmen and emergency personnel.

   d. Temporary equipment and wiring for power and lighting shall be in accordance with applicable provisions of governing codes. Temporary wiring shall be maintained in safe manner and utilized so as not to constitute a hazard to persons or property.

   e. When permanent electrical power and lighting systems are in operating condition, they may be used for temporary power lighting for construction purposes, provided that Contractor obtains written approval of Architect and Owner, assumed full responsibility for entire power and lighting systems, and pays costs for operation and restoration of systems.

   f. At completion of construction work or at such time as Contractor makes use of permanent electrical installation, temporary wiring, lighting and other temporary electrical equipment and devices shall be properly removed by

Contractor.

5. Temporary Heat:

a. Provide all heat as may be necessary for thawing out and heating the ground or materials, and for the proper execution, protection and drying out of his and his Subcontractor's work before permanent apparatus is installed.

b. Temporary heaters shall be smokeless, portable unit heaters, (Underwriter's Laboratories, Factory Mutual, and Fire Marshall approved).

c. After the building or portion thereof has been enclosed, either temporary or permanently, provide temporary heat and maintain continuously at a temperature of not less than 60 degrees nor more than 75 degrees until final acceptance of the work. Comply with requirements under Division 15, Heating, Ventilating, and Air Conditioning for use of permanent heating system for temporary heat.

d. Provide heat as required for temporary structures of a type approved by the Architect.

e. Include all costs of temporary heat in his proposal.

f. When permanent heating system, or suitable portion thereof, is in operating, condition, such system may be used for temporary heating, provided that Contractor obtains written approval of Architect and Owner, assumes full responsibility for new heating system and pays costs for operation and maintenance and restoration of system.

g. Furnish an acceptable operator for the new heating plant during the period when temporary heat is required.

h. Upon conclusion of temporary heating period, remove temporary piping, temporary radiators, other equipment and pay costs in connection with repairing damage caused by installation or removal of temporary heating equipment and shall thoroughly clean and recondition those parts of permanent heating system used for temporary service.

2.2 STAGING AND SCAFFOLDING

A. Furnish, erect, and maintain all staging and scaffolding (exterior and interior) eight (8) feet or over in height for all trades for such use. Furnish, erect and maintain all staging and scaffolding (exterior and interior) for his own use during construction of the building. Staging and scaffolding shall be of approved design, erected and removed by experienced stage builders and shall have all accident prevention devices required by Federal, State, and Local Laws. **All individual contractors shall be responsible for furnishing and maintaining Staging and Scaffolding required to complete their respective scopes of work.**

B. Erect such staging and scaffolding in sufficient time and in proper sequence so as not to delay work. Subcontractors shall schedule and commence their work so that building progress is not delayed or obstructed once staging and scaffolding come available.

C. Each Subcontractor entering upon the work shall furnish, erect, and maintain all staging and scaffolding under 8 feet in height required for work under his subcontract, and where so

indicated all other staging and scaffolding required for his work. On completion of his work, each Subcontractor shall dismantle and remove such staging and scaffolding.

D. Erection of all staging, scaffolding, rigging, etc., shall be supervised and directed by a Licensed Rigger and inspected by a Registered Engineer. A certified affidavit shall be submitted to the Architect by this Engineer stating that all staging, scaffolding, rigging, etc., has been safely erected and conforms in all respects to State and Local Codes. The General Contractor shall pay for all services in connection with the erection and inspection of all staging, scaffolding, and rigging, etc.

E. Above facilities shall be constructed and maintained in accordance with applicable requirements of "American Standard Safety Code of Building and Construction", published by USASI, and be removed after they have served their purpose or when directed by Architect.

F. Permanent stairs shall be erected as soon as possible and Contractor shall provide suitable temporary treads, risers, etc., as required to protect permanent stair members, and provide temporary railing as required for safety.

2.3 FIELD OFFICE AND TELEPHONE

A. The General Contractor shall maintain a field office for the duration of the project, where written and telephone communications can be received.

B. A job site telephone shall be installed within one week of commencing work.

2.4 TEMPORARY STRUCTURES

A. The Contractor and Subcontractor shall construct and maintain, in locations approved by the Architect, all temporary structures, sheds, and similar needs for the storing of their respective materials for the duration of the Contract.

B. All temporary structures shall be of substantial construction and weather tight. Temporary structures shall be removed from site when no longer needed by the Contractor or trade responsible for their erection.

PART 3 EXECUTION

3.1 FIRE PROTECTIVE MEASURES

A. The Contractor shall maintain a rubbish-free building and building site, and shall provide metal barrels into which all luncheon refuse shall be deposited. All such barrels shall have tight-fitting covers.

B. Store materials so they do not create natural pockets for papers or other combustible materials.

C. Construction debris shall not be thrown from the windows of the building but shall be removed through tight strong chutes, and all debris shall be wet down if necessary, or as directed by Architect.

D. When building materials with combustible contents are stored in the building during construction, they shall be located within easy reach of fire protection equipment.

E. An approved number of fire extinguishers shall be placed throughout work areas, temporary paint shop and within easy reach of mechanics who are operating plumber's furnaces, burning or welding apparatus. The number and location shall be approved from time to time by the local fire department.

F. It shall be the duty and responsibility of the General Contractor or any subcontractor performing any cutting or welding, to comply with the safety provisions of the national Fire Protection Association's "National Fire Codes" pertaining to such work and the respective contractor shall be responsible for all damages resulting from a failure to do so comply.

3.2 POLICE, FIREMEN AND INSPECTORS

A. Any police officer, fireman or inspector required by the local authorities having jurisdiction over the work, shall be employed by the Contractor and paid the standard rate or wage for the respective occupation of the work area. All personnel employed shall be covered by Workman's Compensation and Employer's Liability Insurance by the Contractor.

3.3 WINTER CONSTRUCTION

A. Remove snow and ice which may impair progress of work, be detrimental to workmen, or impair trucking, delivery or moving of materials at job site or prevent adequate drainage at site or adjoining areas.

B. Contractor shall take special precautions against damage to materials and work installed in freezing weather, by providing special heat and covering to prevent damage by elements, in manner approved by Architect. Ground surfaces under footings and under pipe lines, and masonry, concrete and other work subject to damage shall be protected against freezing.

3.3 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Architect.

...END OF SECTION

SECTION 01640

PRODUCT HANDLING

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Additional procedures also may be prescribed in other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.3 MANUFACTURERS' RECOMMENDATIONS

A. Except as otherwise approved by the Architect and Owner, determine and comply with manufacturers' recommendations on product handling, storage and protection.

1.4 PACKAGING

A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.

1. Maintain packaged materials with seals unbroken and labels intact until time of use.

2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.

B. The Owner may reject as non-complying such material and products that do not bear identification satisfactory to the Owner as to manufacturer, grade, quality and other pertinent information.

1.5 PROTECTION

A. Every precaution shall be taken to see that all building materials and equipment of all descriptions and parts of the building under construction are properly braced and secured, protected from injury by water, fire, accident, cold weather or other cause; both during work hours and non-working hours.

B. Furnish, erect and maintain exterior barricades, fences and all other safety protection measures required by traffic, municipal and state safety regulation. Remove all enclosures when no longer needed.

C. All damage to materials shall be replaced at no cost to the Owner.

D. Temporary wood doors with self-closing hardware and padlocks, shall be provided for exterior entrances and elsewhere as required.

E. Provide protection for all concrete and finished floors, treads, platforms and the like against mechanical damage, oil, grease, paint and other material which will stain the floor finish. Install and maintain adequate strips of Polyethylene laminated to sisal reinforced paper on finished floors where further work will be done by trades or where subject to traffic.

F. After the installation of work by a given Subcontractor is properly completed, the Contractor shall be responsible for protection and for repair, replacement or cleaning should the subject work be damaged by other trades or by any other cause. All work shall be in perfect condition at the time of final acceptance of the project.

G. Keep all access roads and walks clear of construction equipment, materials, debris and all other items. Repair all work disturbed by construction operation and leave in as good or better condition after completion as found before new work started.

H. Protect everything on the premises from injury by water, frost, wind, fire, accident of other cause and any interference.

I. Provide ways and means to control the flow of water from every source which may cause inconvenience or damage during the building operation.

J. All temporary protection and coverage shall be removed at the completion of the work.

1.6 REPAIRS AND REPLACEMENTS

A. In event of damage, promptly make replacements and repairs to the approval of the Architect and at no additional cost to the Owner.

B. Additional time required to secure replacements and to make repairs will not be considered by the Owner to justify an extension in the Contract Time of Completion.

1.7 BROKEN GLASS

A. The Contractor shall be responsible for all broken, scratched and cracked glass, regardless of cause and no matter by whom damaged, from the time construction has begun until the project is accepted by the Owner. He shall replace all damaged glass and deliver the entire job with all glazing intact and clean.

...END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Provide an orderly and efficient transfer of the completed Work to the Owner.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Activities relative to Contract closeout are described in, but not necessarily limited to, Paragraphs 9.8, 9.9, and 9.10 of the General Conditions.

3. "Substantial Completion" is defined in Paragraph 9.8.1 of the General Conditions.

1.2 QUALITY ASSURANCE

A. Prior to requesting inspection by the Owner, use adequate means to assure that the Work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.3 PROCEDURES

A. Substantial Completion:

1. Prepare and submit the punch list required by the first sentence of Paragraph 9.8.2 of the General Conditions.

2. Within a reasonable time after receipt of the list, the Owner will inspect to determine status of completion.

3. Should the Owner determine that the Work is not substantially complete:

a. The Owner promptly will so notify the Contractor, in writing, giving the reasons therefore.

b. Remedy the deficiencies and notify the Owner when ready for reinspection.

c. The Owner will reinspect the Work.

4. When the Owner concurs that the Work is substantially complete:

a. The Architect will prepare a "Certificate of Substantial Completion" on AIA Form G704, accompanied by the Contractor's list of items to be completed or corrected, as verified by the Owner.

b. The Architect will submit the Certificate to the Owner and to the Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

B. Final Completion:

1. Prepare and submit the notice required by the first sentence of paragraph 9.10.1 of the General Conditions.

2. Verify that the Work is complete including, but not necessarily limited to, the items mentioned in Paragraph 9.10.2 of the General Conditions.

3. Certify that:

a. Contract Documents have been reviewed;
b. Work has been inspected for compliance with the Contract Documents;
c. Work has been completed in accordance with the Contract Documents;
d. Equipment and systems have been tested as required, and are operational;
e. Work is completed and ready for final inspection.

4. If the Contractor is not complete for any of the above requested inspections, the Contractor shall bear the cost of any subsequent inspections to examine the work not complete at previously requested inspections. Expenses to the Owner will include any travel costs and related direct hourly costs from the Architect, Project Manager, Chief Technician and Administrator.

5. The Owner will make an inspection to verify status of completion.

6. Should the Owner determine that the Work is incomplete or defective:

a. The Owner promptly will so notify the Contractor, in writing, listing the incomplete or defective work.

b. Contractor shall remedy the deficiencies promptly, and notify the Owner when ready for reinspection.

7. When the Owner determines that the work is acceptable under the Contract Documents, he will request the Contractor to make closeout submittals.

C. Closeout submittals include, but are not necessarily limited to:

1. Project Record Documents described in Section 01720;

2. Two operation and maintenance data for items so listed in pertinent other Sections of these Specifications, and for other items when so directed by the Owner; Both copies to be submitted to owner project manager.

3. Warranties and bonds;

4. Keys and keying schedule;

5. Spare parts and materials extra stock;

a. The Contractor shall deliver to the Owner the spare parts, extra stock and maintenance materials listed below, and shall obtain a signed receipt for these materials. Materials shall be neatly packaged and identified.

Acoustical Treatment	Two one full cartons each acoustical tile.
Carpet	Salvage larger that 9 square feet in area; total must be at least 3 square yards.
Resilient Flooring	10% of each color of major VCT used throughout, 8 lineal feet, each color and type of base.
Painting	One full gallon, each color and type of paint or stain.
Ceramic Tile	One unopened box of each color and type.
Wall Protection	One eight foot long corner guard with two spare end caps.
Air Distribution	One full carton, each filter size and type.
Lighting	Extra lamps, two each type.

6. Evidence of compliance with requirements of governmental agencies having jurisdiction including, but not necessarily limited to:

   a. Certificates of Inspection;
   b. Certificates of Occupancy;

7. Certificates of Insurance for products and completed operations;

8. Evidence of payment and release of liens (see Lien Release Form at the end of this Section);

9. List of Subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends and holidays.

10. Project data catalog sheets and shop drawing approved and returned by architect described in section 01340.

11. Item numbers 2, 3, 6, 7, 8, 9 and 10 above shall be tabulated and bound into one (1) three ring binder with the project name firmly affixed to the binder spline. Note; Two (2) total bound binders due at end of project.

D. Final adjustment of accounts:

1. Submit a final statement of accounting to the Owner, showing all adjustments to the Contract Sum.

2. If so required, the Owner will prepare a final Change Order showing adjustments to the Contract Sum which were not made previously by Change orders.

1.4 INSTRUCTION

A. Provide training and introduction for the Owner's personnel in proper operation and maintenance of all systems and equipment, after acceptance of Operation and Maintenance Manual. Provide at the Final Completion walkthrough a schedule of such training, allowing the following time periods:

Mechanical Systems - 2 hours

Electrical, Alarm, Nurse Call Systems - 2 hours

Plumbing Systems - 2 hours

Miscellaneous - 1 hour

It is intended for all system to be reviewed with personnel on one complete day prior to the opening and operation of the facility.

CONDITIONAL AFFIDAVIT AND WAIVER OF LIEN

STATE OF: _____

COUNTY OF: _____

_____, being duly sworn upon his oath, deposed and says:

That he makes this Affidavit on behalf of _____ having heretofore entered into and Agreement with _____ for _____ in connection with _____ located at _____, that all labor, materials, and services committed for have been fully paid and indebtedness discharged to date of this Affidavit.

Upon receipt of the outstanding balance of the contract in the sum of _____ Dollars (_____) the undersigned does hereby waive, release and relinquish all rights of lien which the undersigned may now have upon the premises above described for labor and material, general supervision, of construction of alterations and/or otherwise.

FURTHERMORE, the undersigned will hold _____ harmless, and pay any judgments or settlements, resulting from lien(s) filed by any supplier of materials or labor in connection with the above referenced project.

_____
COMPANY

By: _____

SUBSCRIBED IN MY PRESENCE AND SWORN TO BEFORE ME THIS _____ day of _____ _____, 19_____.

_____
Notary Public

My commission expires:

...END OF SECTION

SECTION 01710

CLEANING

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Throughout the construction period, maintain the building, work area and site in a standard of cleanliness as described in this Section.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Conduct daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.2 COMPATIBILITY

A. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 EXECUTION

3.1 PROGRESS CLEANING

A. General:

1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.

2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.

3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.

4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

B. Site:

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.

2. Weekly, and more often if necessary, inspect all arrangements of materials stored on the site. Restack, tidy, or otherwise service arrangements to meet the requirements of subparagraph 3.1-A-1 above.

3. Maintain the site in a neat and orderly condition at all times.

C. Structures:

1. Weekly, and more often if necessary, inspect the structures and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.

2. Weekly, and more often if necessary, sweep interior spaces clean.

a. "Clean," for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a hand-held broom.

3. As required preparatory to installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

4. Following the installation of finish floor materials, clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which finish materials are installed.

a. "Clean," for the purpose of this subparagraph, shall be interpreted as meaning free from foreign material which, in the opinion of the Owner, may be injurious to the finish floor material.

3.2 FINAL CLEANING

A. "Clean," for the purpose of this Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

B. Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.1 above.

C. Site:

1. Unless otherwise specifically directed by the Architect, broom clean paved areas on the site and public paved areas adjacent to the site.

2. Completely remove the resultant debris.

D. Structures:

1. Exterior:

a. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.

b. Remove all traces of splashed materials from adjacent surfaces.

c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.

d. In the event of stubborn stains not removable with water, the Owner may require light sandblasting or other cleaning at no additional cost to the Owner.

2. Interior:

a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.

b. Remove all traces of splashed material from adjacent surfaces.

c. Remove paint droppings, spots, stains, and dirt from finished surfaces.

3. Glass: Clean inside and outside.

4. Polished surfaces: To surfaces requiring routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished.

E. Schedule final cleaning as approved by the Owner to Provide to the Owner a completely clean Work.

3.3 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Owner in accordance with the General Conditions of the Contract.

...END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENT

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included:

1. Throughout progress of the Work, maintain an accurate record of changes in the Contract Documents, as described in Article 3.01 below.

2. Upon completion of the Work, transfer the recorded changes to a set of Record Documents, as described in Article 3.02 below.

B. Related Work:

1. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Other requirements affecting Project Record Documents may appear in other pertinent Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved by the Architect.

B. Accuracy of Records:

1. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry in required to show the change properly.

2. Accuracy of records shall be such that future search for items shown in the Contract Documents may reasonably rely on information obtained from the approved Project Record Documents.

C. Make entries within 24 hours after receipt of information the change has occurred.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Prior to submitting request for final payment, submit the final Project Record Documents to the Architect and secure his approval.

PART 2 PRODUCTS

2.1 RECORD DOCUMENTS

A. Job set: Promptly following the receipt of the Owner's Notice to Proceed, secure from the Architect at no charge to the Contractor one complete set of all Documents comprising the Contract.

B. Final Record Documents: At a time nearing the completion of the Work, secure from the Architect at no charge to the Contractor one complete set of bluelines of all Drawings in the Contract.

PART 3 EXECUTION

3.1 MAINTENANCE OF JOB SET

A. Immediately upon receipt of the job set described in Paragraph 2.01A above, identify each of the Documents with the title "RECORD DOCUMENTS - JOB SET".

B. Preservation:

1. Do not use the Job Set for any purpose except entry of new data and for review by the Architect.

2. Maintain the Job Set at the site of work.

C. Making entries on the Drawings:

1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.

2. Date all entries.

3. Call attention to the entry by a "cloud" drawn around the area or areas affected.

4. In the event of overlapping changes, use different colors for overlapping changes.

D. Make entries in the pertinent other Documents as approved by the Architect.

E. Conversion of Schematic Layouts:

1. In some cases on the Drawings, arrangements of conduits, circuits, ducts, and similar items are shown schematically and are not intended to portray precise physical layout.

a. Final physical arrangement is determined by the Contractor, subject to the Architect's approval.

b. However, design of future modifications of the facility may require accurate information as to the final physical layout of items which are shown only schematically on the Drawings.

2. Show on the Job Set of Record Documents, by dimension, accurate within one inch, the centerline of each run of items such as are described in subparagraph 3.01E.1 above.

   a. Clearly identify the item by accurate note such as "cast iron drain", "galv. water", and the like.

   b. Show, by symbol or note, the vertical location of the item, such as "under slab", "in ceiling", "exposed", and the like.

   c. Make all identification sufficiently descriptive that it may be related reliably to the Specifications.

3. The Architect may waive the requirements for conversion of schematic layouts where, in the Architect's judgement, conversion serves no useful purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Architect.

3.2 FINAL PROJECT RECORD DOCUMENTS

A. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the work to proceed without lengthy and expensive site measurement, investigation, and examination.

B. Approval of recorded data prior to transfer:

1. Following receipt of the bluelines described in Paragraph 2.01B above, and prior to start of transfer of recorded data thereto, secure the Architect's approval of all recorded data.

2. Make required revisions.

C. Transfer of data to Drawings:

1. Carefully transfer change data shown on the Job Set of Record Drawings to the corresponding transparencies, coordinating the changes as required.

2. Clearly indicate at each affected detail and other Drawing a full description of changes made during construction, and actual location of items described in subparagraph 3.01E above.

3. Call attention to each entry by drawing a "cloud" around the area or areas affected.

4. Make changes neatly, consistently, and with the proper media to assure longevity and clear reproduction.

D. Transfer data to other Documents:

1. If the Documents other than the Drawings have been kept clean during the progress of the Work, and if entries thereon have been orderly to the approval of the Architect, the job set of those Documents other than Drawings will be accepted as final Record Documents.

2. If any such Document is not so approved by the Architect, secure a new copy of that Document from the Architect at the Architect's usual charge for reproduction and handling, and carefully transfer the change data to the new copy to the approval of the Architect.

E. Review and Submittal:

1. Submit the completed set of Project Record Documents to the Architect as described in Paragraph 1.03D above.

2. Participate in review meetings as required.

3. Make required changes and promptly deliver the final Project Record Documents to the Architect.

3.3 CHANGES SUBSEQUENT TO ACCEPTANCE

A. The Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting form work performed under Warranty.

...END OF SECTION

Part II
Division 2

Sitework

SECTION 02070

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of in this section.

1.02 DESCRIPTION OF WORK

A. Remove building equipment and fixtures.

B. Remove designated partitions and components.

C. Cap and identify exposed utilities.

1.03 SUBMITTALS

A. Permits and notices authorizing demolition if required by local authorities having jurisdiction.

B. Certificates and severance of utility services.

C. Permit for transport and disposal of debris.

D. Demolition procedures and operational sequence for review by the Owner and Architect.

1.04 PROTECTION

A. Prevent movement or settlement of adjacent elements of construction. Provide and place bracing or shoring and be responsible for safety and support of structure. Be liable for any such movement or settlement and any damage or injury caused.

B. Cease operations and notify the Architect immediately, if safety of structure appears to be endangered. Take all precautions to properly support structure. Do not resume operations until permission is granted by the Architect and authorities having jurisdiction.

C. Provide, erect, and maintain barricades, lighting, and guard rails as required by applicable regulatory advisory to provide full protection for occupants of building and workers.

D. Construction and Demolition Safety: All demolition must be performed safely and, as a minimum, shall comply with the requirements of the current editions of Standard for Safeguarding Building Construction and Demolition Operations of the Department of Labor (DOL/OSHA - 29 CFR 1910), and Construction Industry Standards (DOL/OSHA - 29 CFR 1926).

1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to occupied portions of building.

2. Protect from damage existing finish work that is to remain in place and becomes

exposed during demolition operations.

E. Damages: Promptly repair damages caused to adjacent facilities by demolition work.

F. Traffic: Conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

G. Flame Cutting: Do not use cutting torches for removal until work area is cleared of flammable materials. At concealed space, such as interior of ducts and pipe spaces, verify condition of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.

1.05 EXISTING SERVICES

A. Arrange and pay for disconnecting, removing and capping utility services within areas of demolition. Disconnect and stub off where indicated on the Drawings or as directed in the field. Notify the affected utility company in advance and obtain approval before commencing with this work.

1. Cap or stub off utilities behind finish surfaces, in concealed spaces or as acceptable to the Architect.

2. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

B. Place markers to indicate location of disconnected services. Identify service lines and capping locations on as-built drawings.

1.06 JOB CONDITIONS:

A. Occupancy: Owner's tenants will continue to occupy portions of the building immediately adjacent to the area of selective demolition work in manner that will minimize need for disruption of Tenant's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities that will affect tenant's normal operations.

B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.

C. Partial Demolition and Removal: Items indicated to be removed but of salvageable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.

1. Storage or sale of removed items on site will not be permitted.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Except where noted otherwise, maintain possession of all materials being demolished. Immediately remove from site.

B. Relics and antiques (i.e. cornerstones and their contents, commemorative plaques, and tablets) and similar objects found or indicated remain the property of the Owner.

C. Carefully remove, store and protect for re-installation materials and/or equipment as indicated on the Drawings, and as shown but not limited to the items listed below:

1. Doors.
2. Signs.
3. Mirrors.
4. Tackboards.
5. Chalkboards.
6. Handrails.
7. Fire Extinguishers.
8. X-ray View Boxes.
9. I.V. Tracks/Trees.
10. TV Brackets.

D. Carefully remove materials and equipment, as indicated on the Drawings, to be retained by the Owner. Deliver and store where directed by the Architect or Owner's representative.

PART 3 - EXECUTION

3.01 PREPARATION

A. Maintain exit requirements.

B. Erect and maintain dustproof partitions as required to prevent spread of dust, fumes and smoke to other parts of the building. On completion, remove partitions and make good damaged surfaces to match adjacent surfaces.

1. Utilize materials and products that will control scattering of dust.

C. Properly locate guard rails in stairwells and around open shafts to protect workers. Post warning signs which are clearly visible.

D. Maintain fire protection services during selective operations.

3.02 DEMOLITION

A. Demolish to extent indicated on Drawings and as required to accommodate new work, including that required for connection to the existing buildings. Take particular care in area of new work ensuring protection of existing foundations and supporting structure. Demolish in an orderly and careful manner.

B. Perform demolition in accordance with applicable authorities having jurisdiction.

C. Repair all demolition performed in excess of that indicated or required, to the approval of the Architect and at no cost to the Owner.

D. Burning of materials on site is not permitted.

E. Hazardous waste or other dangerous materials encountered are to be removed from the site and disposed of by safe means so as not to endanger the health of workers and the public at the direction of the owner under contract with others.

F. Remove all demolished materials, tools and equipment from site upon completion of work. Leave site in a condition acceptable to the Architect.

1. The Owner has right of first refusal for all salvageable items removed from the project, including but not limited to light fixtures, plumbing fixtures, doors, windows, equipment, artifacts, copper and other metals and the like.

G. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

H. If unanticipated mechanical, electrical or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Architect in written, accurate detail. Pending receipt of directive from Architect, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.

3.03 DISPOSAL OF DEMOLISHED MATERIALS:

A. Remove from building site debris, rubbish and other materials resulting from demolition operations. Transport and legally dispose off site.

1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.

3.04 CLEANUP AND REPAIR:

A. General: Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave interior areas broom clean.

1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION 02070

Part II
Division 3

Concrete

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Work included: Provide labor, materials, and equipment necessary to complete the work of this Section and, without limiting the generality thereof, furnish and include the following:

1. The extent of cast-in-place concrete work is shown on drawings and includes (but not by way of limitation) formwork, reinforcing, cast-in-place concrete, accessories, and casting in of items specified under other Sections of the Specifications or furnished by Owner that are required to be built-in with the concrete.

2. Equipment support pads indicated on mechanical drawings to be installed by the Building Contractor.

3. Cast-in-place retaining walls, exterior slabs on grade and other concrete shown on site drawings.

1.03 RELATED WORK:

A. Anchor Bolts: Section 05120

B. Joint Sealants: Section 07900

1.04 QUALITY ASSURANCE:

A. Codes and Standards: Comply with provisions of the latest edition of the following except where more stringent requirements are shown or specified:

1. ACI 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete."

2. ACI 212.3R "Chemical Admixtures for Concrete."

3. ACI 301 "Specifications for Structural Concrete for Buildings."

4. ACI 302.1R "Guide for Concrete Floor and Slab Construction."
5. ACI 304R "Guide for Measuring, Mixing, Transporting and Placing Concrete."
6. ACI 304.2R "Placing Concrete by Pumping Methods."
7. ACI 306 R "Cold Weather Concreting."
8. ACI 308 "Standard Practice for Curing Concrete."
9. ACI 309R "Guide for Consolidation of Concrete."
10. ACI 315 "ACI Detailing Manual."
11. ACI 318 "Building Code Requirements for Reinforced Concrete."
12. ACI 347R "Guide to Formwork for Concrete."
13. Concrete Reinforcing Steel Institute, "Placing Reinforcing Bars."

B. Materials and installed work may require testing and retesting, as directed by the Architect, at any time during progress of work. Allow free access to material stockpiles and facilities. Tests not specifically indicated to be done at Owner's expense, including retesting of rejected materials and installed work, shall be done at Contractor's expense.

1.05 SUBMITTALS:

A. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following Products. Include laboratory test reports and other data to show compliance with specifications (including specified standards)

1. Polypropylene fiber admixture.
2. Patching products.
3. Non-shrink grout.
4. Curing Compounds.

B. Shop Drawings

1. General: **Submit one reproducible and two legible prints of all shop drawings**. Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI 315, showing bar schedules, stirrup spacing, diagrams of bent bars and arrangement of concrete reinforcement. Include special reinforcement required at openings through concrete structures. Include supplemental reinforcing and bar supports necessary to support reinforcing steel at proper locations within forms or slabs.

C. Reinforcing Shop Drawing Review

1. Shop Drawing Review: Review of shop drawings will be made for the size and arrangement of reinforcement. Conformance of the Shop Drawings to the Contract Drawings remains the responsibility of the General Contractor. Engineer's review in no way relieves the General Contractor of this responsibility.

2. Shop drawings will not be reviewed as partial submittals. A complete submittal shall include reinforcement drawings and material certifications, as listed in section 1.05.B.1. **Incomplete submittals will not be reviewed**.

D. Samples: Submit samples of materials as specified and as otherwise requested by Architect, including names, sources and descriptions.

E. Concrete Mix Design & Concrete Strength Test Records: As per ACI-301, submit laboratory test reports for concrete materials or mix design test if trial batch method is used for proportioning concrete mixes. These shall be submitted with the concrete mix design.

F. Floor Concrete Fine Aggregate Gradation Seive Analysis: Submit laboratory sieve analysis of fine aggregate used in concrete floor slabs. Aggregate gradation shall conform to ACI 302.1R Table 5.4.1 - "General Guide for Preferred Grading of Fine Aggregates for Floor Concrete", meeting optimum retension value

G. Contraction Joints: Refer to Contract Documents and Drawings for locations of contraction joints.

PART 2 PRODUCTS

2.01 FORM MATERIALS:

A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with 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 and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection.

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 piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

2.02 SLAB CONTRACTION AND CONSTRUCTION JOINT DOWELS

A. All contraction and construction joint dowels shall be installed per manufacturer's recommendations, at locations and spacings noted in Contract Documents. Acceptable manufacturers include:

1. PNA Construction Technologies, Inc., P.O. Box 1411, Mathews, NC 28106, (704)-821-7000

2. Approved equivalent.

2.03 REINFORCING MATERIALS:

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Fiber Reinforcing: ASTM C 1116, Type III virgin polypropylene fibers as manufactured by FIBERMESH or approved alternate.

1. The Fiber size (length) required shall be based on the largest size of the coarse aggregate in the concrete mix and determined by the manufacturer. Manufacturer shall submit written confirmation as to size of fibers which will be used based on concrete mix specified.

C. Welded Wire Fabric: ASTM A 185, welded steel wire fabric. Provide welded wire fabric in flat sheets.

D. Supports for Reinforcement: Provide supports for reinforcement including 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 recommendation, unless otherwise specified. Wood, clay brick and other devices are not acceptable.

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class I) or stainless steel protected (CRSI, Class 2).

2.04 CONCRETE MATERIALS:

A. Portland Cement: ASTM C 150, Type I or Type II, unless otherwise approved Use one brand of cement throughout project, unless otherwise acceptable to Architect.

B. Floor Concrete Fine Aggregate: Concrete floor slab fine aggregate gradation shall conform to ACI 302.1R Table 5.4.1 - "General Guide for Preferred Grading of Fine Aggregates for Floor Concrete", meeting optimum retension values.

C. Normal Weight Aggregates: ASTM C 33. Provide from a single source for exposed concrete. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite, or ochre which can cause stains on exposed concrete surfaces.

D. Light Weight Aggregates: ASTM C 330.

E. Water: Potable.

F. Air-Entraining Admixture: ASTM C 260.

G. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G containing not more than 1% chloride ions.

1. Fiber reinforcing shall be added and distributed prior to incorporation of Super Plasticizer.

H. Normal range water reducing admixture: ASTM C 494 Type A containing no calcium chloride.

I. Accelerating Admixture: ASTM C 494, Type C or E.

J. Calcium Chloride is not permitted.

2.05 RELATED MATERIALS:

A. Moisture Barrier: Provide moisture barrier cover over prepared base material where indicated on contract documents. Lap and seal moisture barrier per industry practice. Seal and secure edges at walls. Use only materials which are resistant to decay when tested in accordance with ASTM E 154 as follows:

1. Polyethylene sheet not less than 15 mils thick.

B. Non-Shrink Cement-based Grout: Provide grout consisting of premeasured, prepackaged materials supplied by the manufacturer requiring only the addition of water. Manufacturer's instructions must be printed on the outside of each bag.

1. Non-shrink: No shrinkage (0.0%) and a maximum 4.0% expansion when tested in accordance with ASTM C-827. No shrinkage (0.0%) and a maximum of 0.2% expansion in the hardened state when tested in accordance with CRD-C-621.

2. Compressive strength: A minimum 28 day compressive strength of 5000 psi when tested in accordance with ASTM C-109.

3. Setting time: A minimum initial set time of 60 minutes when tested in accordance with ASTM C-191.

4. Composition: Shall not contain metallic particles or expansive cement.

C. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M182, Class 2.

D. Moisture-Retaining Cover: One of the following, complying with ANSI/ASTM C 171.

1. Waterproof paper.

2. Polyethylene film.

3. Polyethylene-coated burlap.

E. Liquid Membrane-Forming Curing Compound: Liquid type membrane forming curing compound complying with ASTM C 309, Type I, Class A unless other type acceptable to Architect. Curing compound shall not impair bonding of any material to be applied directly to the concrete. Demonstrate the non-impairment prior to use.

F. Preformed Expansion Joint Formers:

1. Bituminous Fiber Type, ASTM D 1751.

2. Felt Void, Poly-Styrene Cap with removable top as manufactured by SUPERIOR.

G. Slab Joint Filler: refer to Section 07920, Joint Sealants.

H. Waterstops shall be Bentonite/Butyl Rubberbased product. Use in conjunction with manufacturer's approved mastic. Acceptable products include:

1. "Waterstop Rx," by American Colloid Co.

2. "Adeka Ultra Seal MC-2010," by Asahi Denka Koeyo, Kik MN.

I. Floor Hardener: Provide Non-Metallic Mineral Aggregate floor hardener for interior slabs. Apply using mechanical spreader. **Hand broadcasting is not permitted**. Coordinate color with Architect. Acceptable materials include:

1. "Harcol" Sonneborn, Minneapolis, MN

2. "Surflex" Euco, Cleveland, OH

3. Approved equivalent.

2.06 PROPORTIONING AND DESIGN OF 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. Use material, including all admixtures, proposed for use on the project. If trial batch method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Architect.

B. Submit written reports to Architect of each proposed mix for each class of concrete. Do not begin concrete production until mixes have been reviewed by Architect.

C. Proportion design mixes to provide concrete with the following properties:

1. Footings and foundation walls

a. Strength: 3000 psi at 28 days.

b. Aggregate: 3/4" maximum.

c. W/C Ratio: 0.55 maximum

d. Entrained Air: 8% minimum 6% minimum

e. Slump: 4" maximum

2. Interior Slabs on grade and elevated slabs:

a. Strength: 3000 psi at 28 days

b. Aggregate: 1" maximum.

c. W/C Ratio: 0.55 maximum

d. Entrapped Air: 3% maximum 1% minimum (do not add air entrainment)

e. Slump: 4" maximum

3. Exterior Slabs and all other exposed Site Concrete:

a. Strength: 4500 psi at 28 days

b. Aggregate: 1" maximum.

c. W/C Ratio: 0.45

d. Entrained Air: 8% maximum, 6% minimum

e. Slump: 4" maximum

4. Add air entraining admixture at manufacturers prescribed rate to result in concrete at point of placement having the above noted air contents.

5. Additional slump may be achieved by the addition of a mid-range or high-range water reducing admixture. Maximum slump after the addition of admixture shall be 8".

D. 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, at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Structural Engineer before using in work.

1. Water may be added at the project only if the maximum specified slump and design mix maximum water/cement ratio is not exceeded.

2. Additional dosages of superplastisizer should be used when delays occur and required slump has not been maintained. A maximum of two additional dosages will be permitted per ACI 212.3R recommendations.

2.07 CONCRETE MIXING:

A. Job-Site Mixing shall not be permitted.

B. Ready-Mix Concrete: Must comply with the requirements of ASTM C 94, and as herein specified. Provide batch ticket for each batch discharged and used in work, indicating project name, mix type, mix time and quantity.

1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required by Structural Engineer.

2. When the air temperature is between 85 degrees F. and 90 degrees F., reduce the mixing and delivery time from 1 1/2 hours to 75 minutes, and when the air temperature is above 90 degrees F., reduce the mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.01 FORMS:

A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Design, construct, erect, maintain, and remove forms for cast-in-place concrete work in compliance with ACI 347.

C. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.

D. 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, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement paste.

E. 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 to prevent swelling and for easy removal.

F. Provide temporary openings where interior area of formwork is inaccessible for clean out, for inspection before concrete placement and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

G. Chamfer exposed corners and edges as indicated, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

H. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.

1. Unless otherwise indicated, provide ties so portion remaining within concrete after removal is 1" inside concrete and will not leave holes larger than 1" diameter in concrete surface.

I. Provision 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.

J. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete js placed. Retighten forms and bracing after concrete placement as required to eliminate mortar leaks and maintain proper alignment.

3.02 PLACING REINFORCEMENT:

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

1. Rough subgrade tolerance shall conform to a tolerance of +0, -1-1/2 in; fine grading tolerance shall conform to a tolerance of +0, -3/4 in, per ACI 302 4.1.2 through 4.1.4. Confirm compliance prior to removal of excavation material with surveyed measurements taken at 20 ft. intervals in each direction.

2. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

3. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.

4. Place reinforcement to obtain specified coverage for concrete protection within tolerances of ACI-318. 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.

5. Fiber Reinforcing shall be introduced directly into the concrete either at the batch plant or job site at the rate of 1.6 pounds (minimum) per cubic yard. If introduced at the batch plant with the aggregate, no extra mixing time is required. If added at the job site, approximately 3 to 5 minutes mixing at agitating speed is required.

6. Install welded wire fabric in flat sheets in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

3.03 JOINTS:

A. Construction Joints: Locate and install construction joints, which are not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to Architect. Submit plan indicating proposed location of construction joints for review prior to beginning work.

1. Provide keyways at least 1-1/2" deep in construction joints in walls. For slabs install dowel systems per manufacturer's instructions.

2. Roughened surfaces shall be used between walls and footings unless shown otherwise on the drawings. The footing surface shall be roughened to at least an amplitude of 1/4" for the width of the wall before placing the wall concrete.

3. Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints.

B. Contraction Joints in slabs on grade shall be located and detailed as indicated on the drawings. The early-entry dry-cut process shall be used for all saw-cuts. Refer to ACI 302, section 8.3.12. Install dowel systems per manufacturer's instructions.

3.04 INSTALLATION OF EMBEDDED ITEMS:

A. General: Set and build into work 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 thereto. Notify other trades to permit installation of their work.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface.

3.05 INSTALLATION OF GROUT

A. Place grout for base plates in accordance with manufacturer's recommendations.

B. Grout below setting plates as soon as practicable to facilitate erection of steel and prior to removal of temporary bracing and guys. If leveling bolts or shims are used for erection grout shall be installed prior to addition of any column load.

C. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials and allow to cure. For proprietary grout materials, comply with manufacturer's instructions.

3.06 PREPARATION OF FORM SURFACES:

A. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

B. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating material manufacturer's directions. Do not allow excess form coating to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

3.07 CONCRETE PLACEMENT:

A. Preplacement Review: Footing bottoms, reinforcement and all work shall be subject to review by the Structural Engineer. Verify that reinforcing, ducts, anchors, seats, plates and other items cast into concrete are placed and securely held. Notify Structural Engineer 48 hours prior to scheduled placement and obtain approval or waiver of review prior to placement. Be sure that all debris and foreign matter is removed from forms.

B. General: Comply with ACI 304R.

C. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306R.

D. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305R and as herein specified.

3.08 FINISH OF FORMED SURFACES:

A. Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This concrete surface shall have texture imparted by form facing material, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 in. in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, damp-proofing, painting or other similar system. This as-cast concrete surface shall be obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

C. Grout Cleaned Finish: Provide grout cleaned finish to scheduled concrete surfaces which have received smooth form finish treatment. Combine one part Portland cement to 1-1/2 parts fine sand by volume and mix with water to consistency of thick paint. Proprietary additives may be used at Contractor's option. Blend standard Portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will closely match adjacent surfaces.

1. Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

D. Related Unformed Surfaces: At tops of walls and grade beams, horizontal offset surfaces occurring adjacent to formed surfaces, strike-off, smooth and finish with a texture matching adjacent uniformed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.09 FLOOR FLATNESS AND LEVELNESS

A. Floor flatness/levelness tolerances: Tolerances for various floor uses shall conform to the requirements set forth in ASTM E 1155; ACI 302, 8.15; and ACI 117.

1. Slabs on grade shall comply with FF/FL of 40/30 (Very Flat)

3.10 MONOLITHIC SLAB FINISHES:

A. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds, and as otherwise indicated.

B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, and as otherwise indicated.

C. Trowel Finish: Apply steel trowel finish to monolithic slab surfaces indicated, including slab surfaces to be covered with carpet, resilient flooring, paint or other thin-film finish coating system, or exposed with surface hardened finish.

D. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps and ramps, and elsewhere as indicated

E. Surface Hardened Finish: Apply floor hardener per ACI 302 and manufacturer's requirements. Apply using mechanical spreader. **Hand broadcasting is not permitted**.

3.11 CONCRETE CURING AND PROTECTION:

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with the requirements of ACI 306 as herein specified.

B. Curing Methods: Perform curing of concrete by moist curing, by moisture-retaining cover curing, by curing compound, and by combinations thereof, as herein specified.

C. Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

D. Protection From Mechanical Injury: During the curing period, the concrete shall be protected from damaging mechanical disturbances, such as load stresses, heavy shock, and excessive vibration. All finished concrete surfaces shall be protected from damage by construction equipment, materials, or methods, by application of curing procedures, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to overstress the concrete.

3.12 REMOVAL OF FORMS:

A. 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 degrees F 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 beam soffits, joints, slabs and other structural elements, may not be removed in fewer than 14 days or until concrete has attained 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 support.

3.13 REUSE OF FORMS:

A. Clean and repair surfaces of forms to be reused in 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 latency, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect.

3.14 MISCELLANEOUS CONCRETE ITEMS:

A. 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 herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

3.15 CONCRETE SURFACE REPAIRS:

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to the Architect.

1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of 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 specified bonding agent. Place patching mortar after bonding compound has dried.

2. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins, and other projections on surface and stains and other discolorations that cannot be removed by cleaning.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION:

A. The Owner shall employ a testing laboratory to inspect, sample and test the materials and the production of concrete and to submit test reports. Concrete testing shall be performed by technicians certified by the Maine Concrete Technician Certification Board or ACI Concrete Field Testing Technician Grade I.

B. Concrete shall be sampled and tested for quality control during placement. Quality control testing shall include the following, unless otherwise directed by the Architect.

C. Sampling Fresh Concrete: ASTM C 172.

1. Slump: ASTM C143; one test for each concrete load at point of discharge and one test for each set of compressive strength test specimens. Sample shall be taken from middle third of the load per ASTM C172. A slump test must be run prior to the incorporation of the CFP fibers per recommendations of ACI 544. A slump test must be run prior to the addition of a high-range water reducer (superplasticizer) per recommendations of ACI 301.

2. Air Content: ASTM C231 "Pressure method for normal weight concrete." One test for each concrete load, measured at point of discharge and one test for each set of compressive strength specimens.

3. Concrete Temperature: Per ASTM C-1064; One test for each load and one test each time a set of compression test specimens are made.

4. Compression Test Specimen: ASTM C31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.

    a. Fiber reinforced concrete test specimens shall be vibrated externally per recommendations ACI 544.

5. Compressive Strength Tests: ASTM C39; one set for each 50 cu. yds. or fraction thereof, of each concrete class placed in any one day or for each 4,000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days, and 1 specimen retained in reserve for later testing if required.

6. Pumped concrete shall be tested at point of discharge per ACI 301.

D. Additional Tests: The testing service 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 the Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods, as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

END OF SECTION

Part II
Division 4

Masonry

SECTION 04065
MASONRY MORTAR AND GROUT

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes mortar and grout for masonry.

1.02 SUBMITTALS

A. Samples: Submit two samples of mortar, illustrating mortar color and color range.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with MSJC Code (ACI 530/ASCE 5/TMS 402) and MSJC Specification (ACI 530.1/ASCE 6/TMS 602).

1.04 ENVIRONMENTAL REQUIREMENTS

A. Hot and Cold Weather Requirements: MSJC Specification.

PART 2 - PRODUCTS

2.01 MORTAR AND MASONRY GROUT

A. Manufacturers:

1. Blue Circle Cement
2. Citadel Cement
3. CTS Cement Manufacturing Co.
4. Lehigh Portland Cement
5. Medusa Cement Co.

2.02 COMPONENTS

A. Portland Cement: ASTM C150, Type I gray color.

B. Mortar Aggregate: ASTM C144, standard masonry type.

C. Hydrated Lime: ASTM C207, Type S.

D. Mortar Color: Mineral oxide pigment color as selected.

E. Grout Aggregate: ASTM C404, fine and coarse.

F. Water: Clean and potable.

G. Bonding Agent: Latex type.

2.03 MIXES

A. Mortar Mixes:

1. Mortar for Structural Masonry: ASTM C270, Type M using the Performance Specification.

2. Mortar for Non-Structural Masonry: ASTM C270, Type S using the Performance Specification.

3. Stain Resistant Pointing Mortar: One part Portland cement, 1/8 part hydrated lime, and two parts graded (80 mesh) aggregate, proportioned by volume. Add aluminum tristearate, calcium stearate, or ammonium stearate equal to 2 percent of Portland cement by weight.

B. Mortar Mixing:

1. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.

2. Add mortar color and admixtures.

3. Do not use anti-freeze compounds to lower the freezing point of mortar.

C. Grout Mixes:

D. Bond Beams: 2500 psi strength at 28 days; 8 inches slump; mixed in accordance with ASTM C476 Fine grout.

E. Grout Mixing:

1. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C476.

2. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 - EXECUTION

3.01 PREPARATION

A. Apply bonding agent to existing concrete surfaces.

3.02 INSTALLATION

A. Install mortar and grout in accordance with MSJC Specification.

3.03 FIELD QUALITY CONTROL

A. Test mortar and grout in accordance with Section 01001.

B. Testing of Mortar Mix: In accordance with ASTM C780.

C. Testing of Grout Mix: In accordance with ASTM C1019.

3.04 SCHEDULES

A. Exterior Cavity Wall: Brick masonry with Type S mortar with Type N pointing mortar.

B. Elevator Pit: CMU partitions with Type N mortar.

END OF SECTION 04065

SECTION 04300
UNIT MASONRY SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Concrete masonry and brick units, reinforcement, anchorage, and accessories.

1.02 SUBMITTALS

A. Product Data: Provide for decorative concrete masonry units, anchors, ties and fabricated wire reinforcement

B. Samples: Submit four samples of decorative block and face brick units to illustrate color, texture and extremes of color range.

C. Sample Wall: Construct 5' x 5' square sample wall for review and approval by architect. Sample wall to include typical window opening, base of wall and accent bands.

1.03 REGULATORY REQUIREMENTS

A. Conform to applicable BOCA code for requirements for masonry construction.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 and ACI 530.1.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

B. Hot Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. General: Comply with referenced standards and other requirements indicated below applicable to each form of concrete masonry unit required.

B. Provide special shapes where required for lintels, corners, jambs, sash, joints, headers, bonding and other special conditions.

C. Concrete Block: Provide units complying with characteristics indicated below for grade, Type, face size, exposed face and, under each form of block included, for weight classification.

1. Grade N

2. Prism Strength: (f'm) = 1500 psi

3. Size: Manufacturer's standard units with nominal face dimensions of 16" long x 8" high x 8" wide (15-5/8x7-5/8x7-5/8 actual).

4. Type I, moisture-controlled units.

5. Exposed faces: Manufacturer's standard color and texture.

6. Hollow Load-Bearing Block: ASTM C 90 and as follows:

   a. Weight Classification: Normal Weight

7. Provide 2-hr fire rated block / wall assembly typical and all CNU applications.

2.02 BRICK UNITS – Not Applicable

2.03 REINFORCEMENT AND ANCHORAGE

A. Reinforcement and Anchorage Manufacturers:

1. AA Wire Products Co.
2. Dur-O-Wal Inc,
3. Heckman Building Products Inc.
4. Hohmann & Barnard Inc.
5. Masonry Reinforcing Corp. of America.
6. National Wire Products Corp.

B. Single Wythe Joint Reinforcement: Truss type; steel wire, hot dip galvanized to ASTM A641 Class 3 after fabrication, 3/16 inch side rods with 9 gage cross ties.

C. Reinforcing Steel: ASTM A615, 60-ksi yield grade, deformed billet bars, galvanized finish.

D. Wall Ties: Formed steel wire, triangular shape, 0.25" diameter, adjustable, with 14 gage sheet metal anchor section, hot dip galvanized to ASTM A123 B2.

2.04 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color of white cement as required to produce required mortar color as selected by Architect.

B. Hydrated Lime: ASTM C 207, Type S.

C. Aggregate for Mortar: ASTM C 144.

D. Grout Aggregate: ASTM C 404.

E. Water: Clean and potable.

F. Prism Strength: 1500 psi.

G. Iron Oxide Pigments: As required to produce color as selected by Architect.

2.05 FLASHINGS

A. Laminated Copper Flashings: 5 oz. / sq. ft. sheet copper bonded to asphalt saturated fiberglass fabric.

1. Manufacturers:

a. Afco Products Inc.
b. Hohmann & Barnard Inc.
c. Polytite Manufacturing Corp.
d. Sandell Manufacturing Co. Inc.
e. York Manufacturing Inc.

B. Lead coated fabric: 16 oz. / sq. ft. sheet
C. Lap Sealant: Butyl type as specified in Section 07900.

2.06 ACCESSORIES

A. Preformed Control Joints: Neoprene material. Provide with corner and tee accessories, cement fused joints.

B. Joint Filler: Closed cell polyethylene oversized 50 percent to joint width; self-expanding.

C. Masonry Mat: Not Applicable

D. Weep Vents: Not Applicable

E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials recommended by masonry unit manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Verify that field conditions are acceptable and are ready to receive Work.

B. Coordinate placement of anchors supplied to other Sections.

3.02 COURSING

A. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

B. Concrete Masonry Units:

1. Bond: Running
2. Coursing: One unit per one mortar joint equals 8 inches.
3. Mortar joints: Concave

3.03 PLACING AND BONDING

A. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.

B. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.04 WEEPS – Not Applicable

3.05 CAVITY WALL – Not Applicable.

3.06 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER – Not Applicable

3.07 MASONRY FLASHINGS

A. Extend flashings horizontally at foundation walls, above ledge or shelf angles and lintels, under parapet caps, and at bottom of walls,

B. Turn flashing up minimum 8 inches and seal under sheathing over steel stud framed back-up.

C. Lap end joints and seal watertight.

D. Turn flashing, fold, and seal at corners, bends, and interruptions.

3.08 LINTELS

A. Install loose steel, lintels over openings

B. Maintain minimum 8 inch bearing on each side of opening.

3.09 GROUTED COMPONENTS

A. Reinforce bond beam and pilasters as detailed

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.10 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control and expansion joints.

B. Install preformed control joint device in continuous lengths. Seal end, butt, and corner joints in accordance with manufacturer's instructions.

C. Size control joint in accordance with Section 07900 for sealant performance.

D. Form expansion joint as detailed.

3.11 BUILT-IN WORK

A. As work progresses, install built-in metal door and glazed frames fabricated metal frames window frames wood nailing strips anchor bolts plates and other items to be built in the work furnished by other Sections.

B. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

3.12 TOLERANCES

A. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

B. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

3.13 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, sleeves, and grounds, Coordinate with other sections of work to provide correct size, shape, and location.

3.14 CLEANING

A. Remove excess mortar and mortar smears as work progresses.

B. Clean soiled surfaces with cleaning solution.

END OF SECTION 04300

Part II
Division 5

Metals

SECTION 05120

STRUCTURAL STEEL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Extent of structural steel work is shown on drawings, including schedules, notes and details to show size and location of members, typical connections, and type of steel required.

B. Structural steel is that work defined in AISC "Code of Standard Practice" and as otherwise shown on drawings.

C. Miscellaneous Metal Fabrications are specified elsewhere in Division 5.

1.03 QUALITY ASSURANCE:

A. Codes and Standards: Comply with provisions of the following, except as otherwise indicated:

1. AISC "Code of Standard Practice for Steel Buildings and Bridges-March 7, 2000".

2. AISC "Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design", June 1, 1989 including "Commentary" and Supplements issued thereto.

3. AISC "*Specifications for Structural Joints using ASTM A 325 or A 490 Bolts*" approved by the Research Council on Structural Connections of the Engineering Foundation.

4. AISC "*Seismic Provisions for Steel Buildings*", April 15, 1997.

5. AWS D1.1 - 98 "Structural Welding Code" - Steel.

6. AWS D1.3 - 98 "Structural Welding Code" - Sheet Steel.

7. ASTM A 6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use."

B. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS D1.1 "Standard Qualification Procedure."

1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.

2. If re-certification of welders is required, retesting will be the Contractor's responsibility.

C. Fabricator Qualifications: Fabricator must be a member of the American Institute of Steel Construction (AISC), be certified in Category I of the AISC Quality Certification Program, or be a member of the Structural Steel Fabricators of New England (SSFNE). Provide certification of at least one of the above.

1.04 SUBMITTALS

A. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. Structural steel certified mill reports for each grade of steel covering chemical and physical properties and yield strengths.

2. High-strength bolts (each type), including nuts and washers.

3. Structural steel primer paint.

B. Shop Drawings:

1. Shop Drawing Review: Electronic files of structural drawings **will not** be provided to the contractor for preparation of shop drawings.

a. Review of the shop drawings will be made for the size and arrangement of the members and strength of the connections. Conformance of the Shop Drawings to the Contract Drawings remains the responsibility of the General Contractor. Engineer's review in no way relieves the General Contractor of this responsibility. Submit one print and one reproducible. Print will be reviewed and a reproducible will be returned to Contractor for printing and distribution. Multiple copies will not be marked by Engineer and returned.

b. Shop drawings will not be reviewed as partial submittals. A complete submittal shall be provided and shall include; erection and piece drawings indicating all members, braced frames, moment frames and connections, and design calculations. **Incomplete submittals will not be reviewed.**

2. Connection Design: Submit design calculations prepared and stamped by a Professional Engineer registered in the State of Maine for all beam connections not tabulated in the AISC "Manual of Steel Construction" (ASD or LRFD). Submit design for all building braced frames and moment frames where applicable, as indicated on design drawings.

3. Test Reports: Submit copies of reports of tests conducted on shop and field bolted and welded connections. Include data on type(s) of test conducted and test results.

1.05 DELIVERY, STORAGE AND HANDLING:

A. Deliver materials to site at such intervals to insure uninterrupted progress of work.

B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not delay work.

C. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

D. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

PART 2 PRODUCTS

2.01 MATERIALS:

A. Structural Steel Shapes, Plates and Bars: ASTM A 36 minimum, higher strength steel is acceptable.

B. Structural Steel Hot Rolled Shapes: ASTM A 992 Grade 50 .

C. Steel Tube: ASTM A 500, Grade B, Fy = 46 ksi.

D. Steel Pipe: ASTM A 53, Grade B.

E. Anchor Bolts: ASTM A 307, headed type unless otherwise indicated.

F. Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular low-carbon steel bolts and nuts. Provide hexagonal heads and nuts for all connections.

G. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows:

1. Quenched and tempered medium-carbon steel bolts, nuts and washers, complying with ASTM A325. Refer to drawings for diameter.

2. Direct tension indicator washers or bolts may be used at Contractor's option.

H. Electrodes for Welding: E70XX and comply with AWS Codes with proper rod to produce optimum weld joint considering material, weld position and size of joint. All filler metal used for complete penetration groove welds shall have a minimum Charpy V Notch value of 20 ft-lbs. at 40 degrees F for enclosed and heated structures and 20 ft-lbs. at 0 degrees F for all other structures.

I. Non Shrink Cement-Based Grout: See Section 03300

J. Galvanizing: ASTM A 525, Hot-Dipped, G-60 coating.

K. Drilled Anchors: Expansion and adhesive by HILTI or POWERS/RAWL as indicated on the drawings.

2.02 FABRICATION:

A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings.

1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.

2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs and other defects.

B. Connections: Weld or bolt shop connections, as indicated.

1. Bolt field connections, except where welded connections or other connections are indicated.

2. Provide high-strength threaded fasteners for principal bolted connections, except where unfinished bolts are indicated.

C. High-Strength Bolted Connection: Install high-strength threaded fasteners in accordance with AISC "Specification for Structural Joints using ASTM A 325 or A 490 Bolts". Unless otherwise indicated, all bolted connections are to be tightened to the snug tight condition as defined by AISC.

D. Welded Construction: Comply with AWS Codes for procedures, appearance and quality of welds, and methods used in correcting welding work.

E. Holes for Other Work: Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.

F. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

2.03 SHOP PAINTING

A. General: All structural steel shall be shop primed.

B. Structural Steel Primer Paint: All steel shall be primed using fabricator's standard rust inhibitive alkyd primer, equal to Tnemec 10-99. Steel exposed to weather shall be primed with zinc rich primer, Tnemec 90-97, red or gray.

C. Surface Preparation: After inspection and before shipping, clean steel work to be painted. Remove loose mill scale, splatter, slag or flux deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC) SP-2 "Hand Tool Cleaning," unless shown otherwise on drawings.

D. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions. Apply primer at a rate to provide dry film thickness given in this specification. Use painting methods which result in full coverage of joints, corners, edges and exposed surfaces.

PART 3 EXECUTION

3.01 ERECTION:

A. General: Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.

B. Surveys: Check elevations of concrete and masonry bearing surfaces, and locations of anchor bolts and similar devices, before erection work proceeds, and report discrepancies to Architect. Do not proceed with erection until corrections have been made, or until compensating adjustments to structural steel work have been approved by Engineer of Record. Refer to Section 3.03 B.

C. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.

D. Anchor Bolts: Furnish anchor bolts and other connectors required for securing structural steel to foundations and other in-place work.

1. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.

E. Setting Plates and Base Plates:

1. Furnish templates and other devices as necessary for presetting bolts and other anchors to accurate locations. Refer to division 3 of these specifications for anchor bolt installation requirements in concrete.

2. Clean concrete bearing surfaces of bond-reducing materials. Clean bottom surface of setting and bearing plates.

3. Set loose and attached base plates for structural members on wedges or other adjusting devices.

4. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure. For proprietary grout materials, comply with manufacturer's instructions.

F. Field Assembly:

1. Set structural frames accurately to lines and elevations indicated.

2. Align and adjust various members forming part of complete frame or structure before permanently fastening.

3. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly.

4. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

5. Level and plumb individual members of structure within specified AISC tolerance.

6. Splice members only where indicated and accepted on shop drawings.

7. Do not enlarge unfair holes in members by burning or by use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.

G. Erection bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surface.

H. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members which are not under stress, as accepted by the Engineer of Record. Finish gas-cut sections equal to a sheared appearance when permitted.

I. Paint Damage: Touch up shop applied paint whenever damaged or bare. Clean surface and touch up with shop primer noted in Section 2.01 H and top coat, if required.

3.02 QUALITY CONTROL:

A. General: Contractor is responsible for maintaining quality control in the field and for providing a structure that is in strict compliance with the contract documents.

1. Required inspection and testing services are intended to assist the Contractor in complying with the Contract Documents. These specified services, however, do not relieve the Contractor of his responsibility for compliance, nor are they intended to limit the Contractor's quality control efforts in the field.

B. Testing: Owner shall engage an independent testing agency to inspect all high-strength bolted and welded connections, to perform tests and prepare reports of their findings. All connections must pass these inspections prior to the installation of subsequent work which they support.

1. Testing agency shall conduct tests and state in each report which specific connections were examined or tested, whether the connections comply with requirements, and specifically state any deviations therefrom.

2. Contractor shall provide access for testing agency to places where structural steel work is being fabricated, produced or erected so that required inspection and testing can be accomplished.

3. Testing agency may inspect structural steel at plant before shipment. The Engineer, however, reserves the right, at any time before final acceptance, to reject material not complying with specified requirements.

C. Inspection Requirements:

1. Bolted Connections: Inspect all bolted connections in accordance with procedures outlined in the AISC "Specification for Structural Joints using ASTM A325 or A490 Bolts.

D. Snug Tight Connections:

1. The inspector shall monitor the installation of bolts to determine that all plies of connected material have been drawn together and that the selected procedure is used to tighten all bolts.

2. If the inspector does not monitor the installation of bolts, he shall visually inspect the connection to determine that all plies of connected material have been drawn together and conduct tests on a sampling connection bolts to determine if they have been tightened to the snug tight condition. The test sample shall consist of 10% of the bolts in the connection, but not less than two bolts, selected at random. If more than 10% of the tested bolts fail the initial inspection, the engineer reserves the right to increase the number of bolts tested.

E. Slip Critical Connections:

1. The inspector shall monitor the calibration of torquing equipment and the installation of bolts to determine that all plies of connected material have been drawn together and that the selected procedure is used to tighten all bolts.

2. If the inspector does not monitor the calibration or installation procedures, he shall test all bolts in the affected connection using a manual torque wrench to assure that the required pretension has been reached.

3. Field Welded Connections: inspect and test during fabrication of structural steel assemblies, and during erection of structural steel all welded connections in accordance with procedures outline in AWS D1.1. Record types and location of defects found in work. Record work required and performed to correct deficiencies.

4. Certify welders and conduct inspections and tests as required. Submit welder certifications to Engineer of Record. Perform visual inspection of all welds.

5. Welds deemed questionable by visual inspection, all partial and full penetration welds, and any other welds indicated on the drawings to receive non-destructive testing shall be tested by one of the following:

   a. Radiographic Inspection: ASTM E 94 and ASTM E 142; minimum quality level "2-2T".

   b. Ultrasonic Inspection: ASTM E 164.

   c. All welds deemed unacceptable shall be repaired and retested at the Contractor's expense.

F. Nonconforming Work: Contractor shall be responsible for correcting deficiencies in structural steel work which inspections laboratory test reports have indicated to be not in compliance with requirements. Additional tests shall be performed, at the Contractor's expense, as may be necessary to show compliance of corrected work. Any costs associated with the Engineer's review and disposition of faulty works shall be borne by the Contractor.

END OF SECTION

SECTION 05200

STEEL JOIST

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Extent of steel joists is shown on drawings, including basic layout and type of joists required at new mezzanine framing.

B. Related Work specified Elsewhere

1. Section 05120 - Structural Steel

2. Section 05300 - Metal Decking

1.03 QUALITY ASSURANCE:

A. Codes and Standards:

1. Steel Joist Institute (SJI) Standard Specifications, Load Tables and Weight Tables for:

a. K-Series Open Web Steel Joists as designated on the Contract Drawings.

b. KCS-Series Constant Shear Open Web Steel Joists as designated on the Contract Drawings

c. G-Series Open Web Steel Joist Girders as designated on the Contract Drawings.

2. AWS D1.1 - 98 "Structural Welding Code" – Steel

3. AWS D1.3 - 98 "Structural Welding Code" - Sheet Steel

B. Qualification for Welding Work: Qualify welding processes and welding operators in accordance with AWS D1.1 "Standard Qualification Procedure".

1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.

2. If recertification of welders is required, retesting will be the Contractor's responsibility.

1.04 SUBMITTALS:

A. Product Data: Submit manufacturer's specifications and installation instructions for each type of joist and accessories. Include manufacturer's certification that joists comply with SJI Specifications".

B. Shop Drawings: Submit detailed drawings showing layout of joist units, special connections, jointing and accessories. Include mark, number, type, location and spacing of joists and bridging.

C. Design Calculations: Submit design calculations for all steel joists stamped by a Registered Professional Engineer licensed to practice in the State of Maine.

1.05 DELIVERY, STORAGE AND HANDLING:

A. Deliver, store and handle steel joists as recommended in SJI "Specifications". Handle and store joists in a manner to avoid deforming members and to avoid excessive stresses.

PART 2 PRODUCTS

2.01 MATERIALS:

A. Steel: Comply with SJI "Specifications".

B. Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular hexagon type, low carbon steel.

C. Steel Primer Paint: Manufacturer's standard red or grey.

2.02 FABRICATION:

A. General: Fabricate steel joists in accordance with SJI "Specification".

B. Holes in Chord Members: Provide holes in chord members where shown for securing other work to steel joists; however, deduct area of holes from the area of chord when calculating strength of member.

C. Holes in Web: Provide holes in joist and joist girder webs to allow through passage of HVAC, sprinklers, etc. in locations shown on the drawings.

D. Extended Ends: Provide extended ends on joists where shown, complying with manufacturer's standards and requirements of applicable SJI "Specifications and Load Tables".

E. Bridging:

1. Provide horizontal or diagonal type bridging for "open web" joists, complying with SJI "Specifications" and as shown on plans.

2. Provide bridging anchors for ends of bridging lines terminating at walls or beams.

F. End Anchorage: Provide end anchorages to secure joists to adjacent construction, complying with SJI "Specifications", unless otherwise indicated.

G. Shop Painting:

1. Remove loose scale, heavy rust and other foreign materials from fabricated joists and accessories before application of shop paint.

2. Apply one shop coat of primer paint to steel joists and accessories by spray, dipping, or other method to provide a continuous dry paint film of 2.0 to 3.5 dry mils thickness.

PART 3 EXECUTION

3.01 ERECTION:

A. General: Place and secure steel joists in accordance with SJI "Specifications", final shop drawings, and as herein specified.

B. Placing Joists:

1. Do not start placement of steel joists until supporting work is in place and secured.

2. Place joists on supporting work, adjust and align in accurate location and spacing before permanently fastening.

3. Provide temporary bridging, connections and anchors to ensure lateral stability during construction.

C. Bridging: Install bridging simultaneously with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.

D. Fastening:

1. Field weld joists to supporting steel framework in accordance with SJI "Specifications" for type of joists used. Coordinate welding sequence and procedure with placing of joists.

2. Bolt joists to supporting steel framework in accordance with SJI "Specifications" for type of joists used.

a. Provide unfinished threaded fasteners for bolted connections, unless otherwise indicated.

E. Touch-up painting: Clean field welds, bolted connections, and abraded areas, and apply same type of paint as used in shop.

END OF SECTION

SECTION 05300

METAL DECKING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK

A. Extent of metal roof deck is shown on the drawings and includes type B roof deck, cell closures, welding washers and sump plates or pans.

B. Related work specified elsewhere:

1. Section 05120 - Structural Steel

2. Section 05200 – Steel Joist

1.03 QUALITY STANDARDS

A. Codes and Standards: Comply with provisions of the following codes and standards, except where more stringent requirements are indicated or specified:

1. AISI "Specification for the Design of Cold Formed Steel Structural Members".

2. AWS D1.1 "Structural Welding Code" - Steel

3. AWS D1.3 "Structural Welding Code" - Sheet Steel

4. Steel Deck Institute (SDI) " Design Manual for Floor Decks and Roof Decks".

B. Qualification of field welding: Qualify welding process and welding operators in accordance with AWS D1.1 "Standard Qualification Procedure."

C. Inspection: Welded Deck is subject to inspection and testing. Expense of removing and replacing portions of decking for testing purposes will be borne by the owner if welds are found to be unsatisfactory. Work found to be defective will be removed and replaced at the Contractor's expense.

1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.

2. If re-certification of welders is required, re-testing will be the Contractor's responsibility.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for each type of decking and accessories. Include manufacturer's certification as may be required to show compliance with these specifications.

B. Shop Drawings: Submit one sepia and two legible prints of all shop drawings. Submit detailed drawings showing layout and types of deck panels, galvanizing, shop paint, anchorage details, and conditions requiring closure panels, supplementary framing, sump pans, cant strips, cut openings, special jointing, and all other accessories. Use of structural Contract Documents as erection or detail drawings will not be permitted. Electronic versions of structural drawings will not be provided.

PART 2 PRODUCTS

2.01 GENERAL:

A. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. United States Deck

2. Wheeling Corrugating Co.

3. United Steel Deck

4. Vulcraft

B. Materials:

1. Steel for Galvanized Metal Deck Units and accessories: ASTM A653-94 structural quality with a minimum yield strength of 33 ksi or ASTM A611 with a minimum yield strength of 33 ksi.

2. Miscellaneous Steel Shapes: ASTM A36 minimum.

3. Sheet metal Accessories: ASTM A526, commercial quality, galvanized.

C. Galvanizing: Conform to ASTM 924-94 with minimum coating class of G60 (Z180) as defined in ASTM A653-94.

D. Paint: Manufacturer's baked on, rust inhibitive paint, for application to metal surfaces which have been chemically cleaned and phosphate chemical treated.

E. Flexible closure Strips: Manufacturer standard vulcanized, closed-cell, synthetic rubber.

2.02 FABRICATION:

A. General: Form deck units in lengths to span 3 or more supports, unless otherwise noted on the drawings, with flush, telescoped or nested 2" laps at ends and interlocking or nested side laps, unless otherwise indicated. For roof deck units, provide deck configurations complying with SDI "Roof Deck Specifications," of metal thickness, depth and width as shown.

B. Metal Closure Strips: Fabricate metal closure strips, cell closures, "Z" closures, column closures, pour stops, girder fillers and openings between decking and other construction, of not less than 0.045" min. (18 gage) sheet steel or as indicated on the drawings. Form to provide tight fitting closures at open ends of cells or flutes and sides of decking.

C. Roof Sump Pans: Fabricate from a single piece of 0.071" min. (14 gage) galvanized sheet steel with level bottoms and sloping sides to direct water flow to the drains, unless otherwise shown. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3" wide. Recess pans not less than 1 1/2" below roof deck surface, unless otherwise shown or required by deck configuration. Holes for drains will be cut in the field.

PART 3 EXECUTION

3.01 INSTALLATION:

A. Install deck units and accessories in accordance with manufacturer's recommendations and final shop drawings, and as specified herein.

B. Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before permanently fastened. Do not stretch or contact side lap interlocks.

C. Place deck units in straight alignment for entire length of run of cells and with close alignment between cells at ends of abutting units.

D. Place deck units flat and square, secured to adjacent framing without warp or excessive deflection.

E. Coordinate and cooperate with the structural steel erector in locating decking bundles to prevent overloading of structural members.

F. Do not use decking units for storage or working platforms until permanently installed.

3.02 FASTENING:

A. General: Fasten metal deck to supporting steel members as indicated on the Design Drawings: Each deck is to be fastened with a minimum of 5/8" diameter puddle welds spaced not more than 12" o.c. with a minimum of 2 welds per unit at each support. Secure deck units at 6" oc along brace lines, edge of building or at the edge of openings or deck discontinuity. Secure deck to each supporting member in ribs where sidelaps occur. Use welding washers where recommended by the deck manufacturer, and for all deck lighter than 22 gage. Deck units shall bear over the ends of supports by a minimum of 1.5".

1. End Closures: Tack weld or use #12 hex head machine screws at 4'-0" o.c. for fastening end closures.

B. Sidelaps: Fasten sidelaps of adjacent roof deck units between supports as indicated on the drawings, but not less than (2) #12 Tek screw sidelap connections per span.

C. Welding: Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work.

D. Uplift loading: Roof deck shall be designed for a net uplift of 12 psf.

E. Cutting and Fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking.

F. Reinforcement at openings: Provide additional metal reinforcement and closures pieces as required for strength, continuity of decking and support of other work shown.

1. Deck penetrations affecting no more than (1) deck rib need not be reinforced.

2. For deck penetration affecting more than (1) deck rib, but less than 13", reinforce the opening with a 0.057" thick plate spanning between unaffected ribs.

3. Reinforce deck penetrations larger than 13" with the structural frame described in the Design Drawings.

G. Joint Covers: Provide metal joint covers at abutting ends and changes in direction of floor deck units.

H. Roof Sump Pans: Place over openings provided in roof decking and weld to top decking surface. Space welds not more than 12" on center with at least 1 weld in each corner. Cut opening in roof sump bottom to accommodate drain size indicated.

I. Closure Strips: Provide metal closure strips at open uncovered ends and edges of roof decking, and in voids between decking and other construction. Weld into position to provide a complete decking installation.

J. Touch-Up Painting:

1. Painted Deck: After decking installation, wire brush, clean and paint scarred areas, welds and rust spots on top and bottom surfaces of decking units and supporting steel members.

a. Touch up painted surfaces with same type paint used on adjacent surfaces.

b. In areas where shop-painted surfaces are to be exposed, apply touch-up paint to blend into adjacent surfaces.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

1 PART 1 GENERAL

1.1 SUMMARY

A. Section includes shop fabricated ferrous metal items, galvanized and prime painted; steel stair frame of structural sections, with pan to receive concrete fill stair treads and landings; and balusters and handrailing.

1.2 SYSTEM DESCRIPTION

A. Design stair assembly to support uniform live load of 100 lb./sq. ft and concentrated load of 300 lbs. at any point with deflection of stringer or landing framing not to exceed 1/360 of span.

B. Design railing, wall rails, and attachments to resist a concentrated load of 200 lbs. at any point and in any direction and a uniform lateral force of 75 lbs. horizontally and 100 lbs. vertically at any point without damage or permanent set.

1.3 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.

1.4 QUALITY ASSURANCE

A. Prepare Shop Drawings under direct supervision of a professional engineer experienced in design of this work and licensed in the State of Maine.

2 PART 2 PRODUCTS

2.1 COMPONENTS

A. Steel Sections: ASTM A36/A36M.

B. Steel Plate: ASTM A283.

C. Steel Tubing: ASTM A500, Grade B.

D. Steel Pipe: ASTM A53, Grade B Schedule 40.

E. Sheet Steel: ASTM A653/A653M, Grade B Structural Quality with galvanized coating.

F. Bolts, Nuts, and Washers: ASTM A325 galvanized to ASTM A153/A153M for galvanized members.

G. Handrail Fittings: Elbows, T-shapes, wall brackets, escutcheons; cast or machined steel.

H. Nosings: Cast aluminum nosings with abrasive grain surface, 3" width by full length of treads.

2.2 ACCESSORIES

A. Welding Materials: AWS D1.1.

B. Shop and Touch-Up Primer: SSPC 15, Type 1, red oxide

C. Touch-Up Primer for Galvanized Surfaces: SSPC 20 Type I Inorganic

D. Concrete and Reinforcement for Treads and Landings: Mesh type, Portland cement, as specified in Section 03050.

2.3 FABRICATION

A. General:

1. Fit and shop assemble items in largest practical sections, for delivery to site.
2. Continuously seal joined members by continuous welds.
3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
4. Exposed Mechanical Fastenings: Flush countersunk screws or bolts, consistent with design of component.
5. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication.
6. Accurately form components required for anchorage of stairs, landings and railings to each other and to building structure.

B. Pan Stairs And Landings:

1. Fabricate stairs and landings with closed risers and treads of metal pan construction, ready to receive concrete.
2. Form treads, landings, and risers with sheet steel stock.
3. Secure reinforced tread pans to stringers with clip angles welded in place.
4. Form stringers with rolled steel channels Weld facial plates to channels using steel sheet across channel toes.
5. Prime paint components.

C. Handrails:

1. Fit and shop assemble components in largest practical sizes, for delivery to site.
2. Grind exposed joints flush and smooth with adjacent finish surface.
3. Accurately form components to suit stairs and landings, to each other and to building structure.
4. Form infill panels of perforated sheet steel, welded to guardrail system.
5. Form balusters of bar stock, with spacing not greater than 4", welded to guardrail system.

D. Entire stair system shall be designed to conform with all applicable structural loading criteria set forth in BOCA 101.

2.4 FINISHES

A. Prepare surfaces in accordance with SSPC SP 2

B. Shop prime items with one coat. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Galvanize to ASTM A123, exterior structural steel members; provide minimum 1.25 oz/sq. ft galvanized coating.

3 PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

A. Make provisions for erection loads with temporary bracing. Keep work in alignment.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, to appropriate sections.

3.3 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads and provide temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components indicated on shop drawings. Perform field welding in accordance with AWS D1.1.

D. Obtain approval prior to site cutting.

E. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.4 SCHEDULES

A. The Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.

B. Ledge and Shelf Angles, Channels and Plates Not Attached to Structural Framing: For support of masonry, galvanized finish.

C. Lintels: As detailed; galvanized finish.

D. Stairs 1 and 2: Pan stairs and landings, tubular handrail, primed finish.

END OF SECTION

SECTION 05505

MISCELLANEOUS METALS

PART 1 GENERAL

1.1 WORK SPECIFIED HEREIN

A. All labor, materials, equipment and services necessary to provide the miscellaneous metals and related items as indicated or specified.

1.2 SUBSTITUTIONS

A. In accordance with Section 01600

1.3 DESCRIPTION OF WORK

A. The extent of miscellaneous metal work is shown on the Drawings and includes items fabricated from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of the structural steel or other metal systems in other Sections of these Specifications.

B. The types of miscellaneous metal items include, but are not limited to, the following:

1. Carpenter's iron work
2. Miscellaneous framing and supports
3. Pipe Bollards

1.4 QUALITY ASSURANCE

A. Comply with the provisions of the following codes, standards and Specifications, except as otherwise shown and specified.

B. AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings," including "Commentary of the AISC Specifications".

C. AISI "Specifications for the Design of Cold-Formed Steel Structural Members".

D. AWS "Structural Welding Code-Steel".

E. ASTM A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piping and Bars for Structural Use".

F. Qualification for welding work. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

G. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of the work. However, do not delay job progress; allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the work.

H. Inserts and Anchorage's: Furnish inserts and anchoring devices which must be set in concrete or built into masonry for the installation of miscellaneous metal work. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

I. Shop Assembly: Preassemble items in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Metal surfaces, general: For the fabrication of Miscellaneous Metal Work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding or by welding and grinding, prior to cleaning, treating and application of surface finishes including zinc coatings.

B. Steel Plates, Shapes and Bars: ASTM A36

C. Steel Bars and Bar-size Shapes: ASTM A36

D. Steel Tubing: (Hot-formed, welded or seamless): ASTM A501

E. Hot-rolled Carbon Steel Bars: ASTM A108, Grade as selected by fabricator

F. Hot-rolled Carbon Steel Sheets and Strips: ASTM A568 and ASTM A569; pickled and oiled

G. Cold-rolled carbon Steel Sheets: ASTM A336

H. Galvanized Carbon Steel Sheets: ASTM A526, with ASTM A525, G90 zinc coating

I. Cold-drawn Steel Tubing: ASTM A512, sunk drawn, butt welded, cold-finished and stress-relieved

J. Steel Pipe: ASTM A53, type as selected; Grade A. Black finish unless galvanizing is required. Standard weight, Schedule 40, unless otherwise shown or specified.

2.2 ANCHORS

A. Threaded-type concrete inserts. Galvanized ferrous castings, internally threaded to receive 3/4" diameter machine bolts; either malleable iron complying with ASTM A47 or cast steel complying with ASTM A27; hot-dip galvanized in compliance with ASTM A153.

B. Wedge-type Concrete Inserts: Galvanized box-type ferrous castings, designed to accept 3/4" diameter bolts having special wedge-shaped heads, either malleable iron complying with ASTM A47 or cast steel complying with ASTM A27; hot-dipped galvanized in

compliance with ASTM A153.

C. Provide carbon steel bolts having special wedge-shaped heads, nuts, washers and shims; all galvanized in compliance with ASTM A153.

D. Slotted-type Concrete Inserts: Galvanized 1/8" thick pressed steel plate complying with ASTM A283. Box-type welded construction with slot designed to receive 3/4" diameter square head bolt and with knockout cover. Hot-dip galvanized in compliance with ASTM A123.

E. Masonry Anchorage Devices: Expansion shield; FS FF-S-325.

F. Toggle Bolts: Tumble-wing type; FS FF-B-588, type, class and style as required.

2.3 FASTENERS

A. General: Provide zinc-coated fasteners with galvanizing complying with ASTM A153 for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required for the installation of miscellaneous metal items.

B. Bolts and Nuts: ASTM A307, Grade A, regular hexagon head.

C. Bolts, hexagon and square: ANSI B-18.2.1.

D. Bolts, round head: ANSI B-18.5.

E. Washers, Plain: ANSI B18.22.1.

F. Washers, Beveled: ANSI B18.23.1.

G. Lag Bolts: FS FF-B-561, square head type.

H. Wood Screws: ANSI B-18.6.1, flat head carbon steel.

I. Plain Washers: FS FF-W-84, helical spring type carbon steel.

2.4 PAINT

A. Refer to division 09900.

2.5 FABRICATION GENERAL

A. Use materials of the size and thickness shown, or if not shown, of the required size and thickness to produce adequate strength and durability of the finished product for the intended use. Work to the dimensions of fabrication and support. Use the type of materials shown or specified for the various components of work.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the work.

C. Weld corners and seam continuously and in accordance with the recommendations of AWS. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.

D. Form exposed connections with hairline joints which are flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type shown, or if not show, use Phillips flat-head (countersunk) screws or bolts.

E. Provide for anchorage of type shown, coordinated with supporting structure and the progress schedule. Fabricate as required to provide adequate support for the intended use of the work.

F. Cut, reinforce, drill and tap miscellaneous metal work as may be required to receive finish hardware and similar items of work.

G. Use hot-rolled steel bars for work fabricated from bar stock, unless work is indicated to be fabricated from cold-rolled, or cold-finished stock.

H. Galvanizing: Provide a zinc-coating for those items shown or specified to be galvanized, using the hot-dip process after fabrication.

1. ASTM A153 for galvanizing of iron and steel hardware.
2. ASTM A123 for galvanizing of rolled, pressed and forged steel shapes, plates, bars, and strip 1/8" thick and heavier, and for galvanizing of assembled steel products.

I. Shop Painting:

J. Shop paint miscellaneous metal work, except those members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, and galvanized surfaces, unless otherwise indicated.

K. Remove scale, rust and other deleterious materials before the shop coat of paint is applied. Clean off heavy rust and loose mill scale in accordance with SSPC SP-2 "Hand Tool Cleaning", or SSPC SP-3 "Power Tool Cleaning: Or SSPC SP-7 "Brush-off Blast Cleaning". Remove oil, grease and similar contaminants in accordance with SSPC S{P-1 "Solvent Cleaning".

L. Apply one shop coat of metal primer paint to fabricated metal items, except apply two (2) coats of paint to surfaces which are inaccessible after assembly or erection.

M. Immediately after surface preparation, brush or spray on metal primer paint, applied in accordance with the manufacturer's instructions, and at a rate to provide a uniform dry film thickness of 2 mils for each coat. Use painting methods which will result in full coverage of joints, corners, edges and all exposed surfaces.

PART 3 EXECUTION

3.1 MISCELLANEOUS METAL ITEMS

A. Carpentry's Iron Work:

1. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and

other stock rough hardware are specified in Division 6 Sections.

2. Manufacture or fabricate items of sizes, shapes and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere furnish steel washers.

B. Miscellaneous Framing and Supports:

1. Provide miscellaneous steel framing and supports which are not a part of the structural steel framework, as required to complete the work.

2. Fabricate miscellaneous units to the sizes, shapes and profiles shown, or if not shown, of the required dimensions to receive adjacent grating, plates, doors or other work to be retained by the framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars of all welded construction using mitered corners, welded brackets and splice plates and a minimum number of joints for field connection. Cut, drill and tap units to receive hardware and similar items to be anchored to the work.

3. Equip units with integrally welded anchor straps for casting into concrete or building into masonry wherever possible. Furnish inserts if units must be installed after concrete is poured.

...END OF SECTION 05505

Part II
Division 6
Wood & Plastics

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.1 DESCRIPTION

A. Includes all labor, materials, services, equipment and related items required for the complete installation of Rough Carpentry work as indicated by the Contract Documents.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.

2. Section 06400 - Finish Carpentry

3. Section 08100 - Metal Doors and Frames

4. Section 09250 - Gypsum Drywall

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Meet Requirements and recommendations of applicable portions of Standard listed.

1.	Products Standards	PS
2.	American Plywood Association	APA, DFPA
3.	Architectural Woodwork Institute	AWI
4.	American Wood Preservers Institute	AWPI
5.	National Forest Products Association	NFPA
6.	Southern Pine Inspection Bureau	SPIB

C. Material Grading

1. The grades of the materials used shall be defined by the rules of the recognized associations of lumber manufacturers producing the material specified, but the maximum defects permissible in any specific grade shall not exceed the limitations of the American Lumber Standards.

2. Defects expressly prohibited by this Section shall not appear in the material used, even if permissible in the grade specifications.

3. The sized specified are nominal board measure dimensions unless otherwise noted.

1.3 SUBMITTALS

A. Submit product data in accordance with Section 01340.

B. Certification:
1. Pressure treated wood: Submit certification by treating plant stating chemicals and process used, net amounts of salts retained, and conformance with applicable standards.

2. Preservation treated wood: Submit certification for water-borne preservative that moisture content was reduced to 19% maximum, after treatment.

C. Comply with pertinent provision of Section 01340.

1.4 PRODUCT HANDLING

A. Immediately upon delivery to the job site, place materials in area protected from water.

B. Store materials a minimum of 6" above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation and ventilation.

C. Do not store seasoned materials in wet or damp portions of building.

D. Protect fire retardant materials against high humidity and moisture during storage and erection.

E. Protect sheet materials from corners breakage and surface damage, while unloading.

F. Comply with pertinent provisions of Section 01640.

PART 2 PRODUCTS

2.1 MATERIALS

A. Framing Lumber: Grade marked, No. 2 com. Southern Yellow Pine or construction grade Douglas Fir, moisture content under 19% free of warp that cannot be corrected by nailing, S4S. #2 S.P.F.

B. Bracing, Blocking and Grounds: Grade marked No. 2 com. Southern Yellow Pine or construction grade Douglas Fir, moisture content under 19%, S4S. #2 S.P.F.

C. Underlayment: Not applicable

D. Rough Hardware: Nails, spikes, screws, bolts, etc., shall be of the proper types and sizes, and used in such numbers and quantities as is the usual custom in good practice for securing the various items and members.

E. Plywood: Use APA rated sheathing, structural 1, C-D Exterior grade Fir or Yellow Pine, DFPC grade stamped, thickness as follows:

exterior walls:	1/2" thick – span rating 32/16
roof deck:	3/4" thick – span rating 40/20
parapet backing:	1/2" thick
other applications: as noted on drawings	

F. Plywood backer board within electrical rooms and elevator machine rooms: 3/4" APA rated A/C Plywood, Exterior.

2.2 PRESERVATIVES

A. Use lumber pressure treated with a water-borne salt preservative, Wolman, Erdalith, or Chemowater Zinc Chloride in accordance with AWPI Specifications P-5 for abutting concrete or masonry in damp locations, where in contact with the ground, concrete, plaster, stucco or steel, including use for sills, plates, screeds, cant strips, blocking, nailers and bucks.

B. Reduce moisture content to 19% or less after treatment for 2" thick lumber.

C. Reduce moisture content to 23% or less after treatment for over 2" thick lumber.

D. Furnish certificate from lumber treating company showing treatment amount and moisture content after drying.

E. Brush coat surfaces that have been cut after treatment with preservatives.

PART 3 EXECUTION

3.1 INSTALLATION

A. Cutting and Repairing: Do such work as normally required and done for mechanical and other trades.

B. Blocking: Furnish and install blocking, furring, brackets, etc., as required to properly carry out all work shown and reasonably inferred by the Drawings and Specifications.

C. Nailers and Wood Cants: Nailers, 2" stock unless otherwise noted, of the proper widths. Bevel nailers for concrete 1/2" both sides and properly place in forms. Bolt nailers in place on steel or masonry. Furnish ledgers bolted to wall in locations shown and as required.

D. Shoring: Furnish and place all necessary shoring and bracing of types and sizes best suited for the conditions to be met. Shoring must comply with all governing requirements.

E. Provide wood curbs, required blocking and cants around all openings through the roof indicated on all architectural, mechanical and electrical drawings. Check drawings for all trades and furnish for all openings indicated.

F. Studs for interior walls shall be solid and continuous from floor to double plate at trusses, and shall not be cut for straightening; warped studs shall be replaced.

G. Studs shall be doubled at all corners, openings, and beam bearing points.

H. Headers over openings in walls shall be as follows, unless noted otherwise:

Opening Width	Header Size
up to 6' - 0"	2-2x6
6' to 8' - 0"	2-2x8
8' to 10' - 0"	2-2x10

l. Plywood Backer Boards: 5/8" pressure treated plywood installed over gypsum board fastening into studs 8" o.c., typical. When applied over masonry walls, install 1 x 3 furring 24" o.c. Seal all vertical joints, and top, bottom and ends with Tremco Sealant.

...END OF SECTION 06100

SECTION 06200

FINISH CARPENTRY

PART 1 GENERAL

1.1 DESCRIPTION

A. Description of Work:

1. Includes all labor, equipment, services and materials to install wood finish of every description required to complete the building including trim, shelving, exterior finish, interior finish, and to hang all doors and install finish hardware, prefabricated cabinets, and other items of finished carpentry and millwork as shown on drawings and specified herein.

2. On receipt of hardware, the Contractor shall take care of the order, shall check all items as received at the site, report any damage or missing items promptly to the hardware supplier as soon as received, and be responsible for all finish hardware items until completion of the Contract. All hardware shall be left in perfect working order at completion, when all keys shall be properly labeled and delivered to the Owner.

3. "Architectural Woodwork" is defined to include (in addition to items so designated on the Drawings) all miscellaneous exposed wood members commonly known as Finish Carpentry or Millwork, unless such items are specified under another Section of these Specifications.

4. The types of architectural woodwork include, but are not necessarily limited to, the following:

   a. Wood Shelving
   b. Casework for transparent finish
   c. Casework for paint finish
   d. Casework for plastic laminate finish
   e. Window trim
   f. Chair rails

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Section 06100: Rough Carpentry

3. Section 06400: Architectural Woodwork

4. Section 08100: Metal Doors & Frames

5. Section 08211: Flush Wood Doors

6. Section 08710: Finish Hardware

7. Section 09900: Painting

1.2 QUALITY ASSURANCE

A. Use Adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

PART 2 PRODUCTS

2.1 LUMBER MATERIALS

A. Softwood Lumber: PS 20; Graded in accordance with AWI Custom ; clear Eastern White Pine species, plain sawn, maximum moisture content of 11 percent.

B. Hardwood Lumber: Graded in accordance with AWI Custom ; Natural Birch species, plain sawn, maximum moisture content of 11 percent; of quality suitable for transparent finish.

2.2 ACCESSORIES

A. Fasteners: Size and type to suit application; hot dipped galvanized steel for exterior, high humidity and treated wood locations, plain finish elsewhere.

B. Primer: Alkyd primer sealer type.

2.3 FABRICATION

A. Fabricate to AWI Custom standards.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 WORKMANSHIP

A. Produce joints which are true, tight, and well nailed with all members assembled in accordance with the Drawings.

B. Jointing:

1. Make joints to conceal shrinkage, miter exterior joints; cope interior joints; miter or scarf end-to-end joints.

2. Install trim in pieces as long as possible, jointing only where solid support is obtained.

C. Fastening:

1. Install items straight, true, level, plumb, and firmly anchored in place.

2. Where blocking or backing is required, coordinate as necessary with other trades to ensure placement of required backing and blocking in a timely manner.

3. Nail trim with finish nails of proper dimension to hold the member firmly in place without splitting the wood.

4. Nail exterior trim with galvanized nails, making joints to exclude water and setting in waterproof glue or the sealant.

5. On exposed work, set nails for putty.

6. Screw, do not drive, wood screws; except that screws may be started by driving and then screwed home.

3.3 INSTALLATION OF OTHER ITEMS

A. Install items in strict accordance with the Drawings, and the recommended methods of the manufacturer as approved by the Architect, anchoring firmly into position at the prescribed location, straight, plumb, and level.

B. Adjust all cabinet doors and drawers for smooth operation and proper fit. Joints between cabinet doors and drawers shall be uniform in size at all edges.

C. Install standing trim in single lengths without splices, running trim in lengths as long as possible, joined only where solid fastenings can be made. End joints in built-up members shall be well distributed. Miter external corners, cope internal corers. Miter or scarf end to end joints.

3.4 FINISHING

A. Sandpaper finished wood surfaces thoroughly as required to produce a uniformly smooth surface, always sanding in the direction of the grain; except do not sand wood which is designed to be left rough.

B. No coarse grained sandpaper mark, hammer mark, or other imperfection will be accepted.

3.5 CLEANING UP

A. Keep the premises in a neat, safe, and orderly condition at all times during execution of this portion of the Work, free from accumulation of sawdust, cut-ends, and debris.

B. Sweeping:

1. At the end of each working day, and more often if necessary, thoroughly sweep surfaces where refuse from this portion of the work has settled.

2. Remove the refuse to the area of the job site set aside for its storage.

3. Upon completion of this portion of the work, thoroughly broom clean all surfaces.

...END OF SECTION 06200

SECTION 06400

ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Provide architectural woodwork where shown on the Drawings, as specified herein, and as needed for a complete and proper installation, including: trim, sills, interior and exterior finish, misc. finish woodwork.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Finish Carpentry - Section 06200

1.2 QUALITY ASSURANCE

A. Use adequate members of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Codes and Standards:

1. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, comply with "Architectural Woodwork Institutes Standards" for the grades specified.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 20 calendar days after the Contractor has received the Owner's notice to proceed, submit:

1. Materials list of items proposed to be provided under this Section;

2. Scope Drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this section with the work of adjacent trades.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

PART 2 PRODUCTS

2.1 GENERAL

A. Fabricate Architectural woodwork to "custom grade" standard of the Architectural Woodwork Institute.

B. Wood:

1. On exposed portions, provide Plain Sawn Natural Birch veneer plywood for natural finish.

2. On semi-exposed portions, provide the manufacturer's standard cabinet liner as approved by the Architect.

C. Finishing: Site finish or mill finish architectural woodwork in accordance with pertinent provisions of Section 09900 of these Specifications.

2.2 WINDOW SILLS

A. Wood:

1. 1x Birch with clear polyurethane finish system.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are correction.

3.2 FIELD MEASUREMENTS

A. Take necessary measurements in the field to assure proper dimensions for the work of this Section.

3.3 FABRICATION

A. Fabricate the work of this Section in strict accordance with the approved Shop Drawings and the referenced standards.

3.4 INSTALLATION

A. Install the work of this Section in strict accordance with the approved Shop Drawings and the referenced standards, anchoring all items firmly into position.

3.5 COMPLIANCE

A. The Owner reserves the right to request and pay for an inspection by a representative of the Architectural Woodwork Institute to determine that the work of this Section has been performed in accordance with the specified standards.

B. In the event such inspection determines that the work of this Section does not comply with the specified requirements, immediately remove the non-complying items and immediately replace them with items complying with the specified requirements, all at no additional cost to the Owner, and reimburse the Owner for the cost of the inspections.

...END OF SECTION 06400

Part II
Division 7

Thermal and Moisture Protection

SECTION 07210

BUILDING INSULATION

PART 1 GENERAL

1.1 DESCRIPTION

A. Furnish and install all building insulation where shown on the drawings, as specified herein, and as needed for a complete and proper installation.

B. Where the thermal performance of an existing roof is not indicated on the drawings, Contractor shall verify the existing R-Value prior to bidding. Contractor's bid shall include an alternate identifying the existing R-Value and the cost associated to achieve an R-Value which meets governing energy codes but is not less than R-19. Furnish and install Batt Insulation at the underside of the existing roof to attain required values.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Documents affecting work of this Section include, but are not limited to the General Conditions, Supplementary Conditions, Division of these Specifications, and the following technical Sections:

1. Section 09250 - Gypsum Wallboard

1.3 DEFINITIONS

A. R-value designation is the thermal resistance of insulation only, not including air space or other factors assumed to result in higher R-value.

1.4 PRODUCT DELIVERY AND STORAGE

A. Deliver materials to project site in manufacturer's original packaging.

B. Clearly identify manufacturer, contents, brand name, applicable standard, R-value.

C. Store materials off ground and protect against weather, condensations, and damage. Remove damaged materials from site.

PART 2 MATERIALS

2.1 BATT INSULATION

A. Sound barrier insulation shall be 3 1/2" thick Owens-Corning Sound Attenuation Batt Insulation.

B. Non-Metal Paneled Exterior Wall Systems: 6" thick, Owens-Corning Thermal Batt Insulation, R-19.0 (un-faced). Provide 6 mil. poly vapor barrier. Patch and repair existing insulation and vapor barrier as required.

C. Metal Paneled Exterior Wall Systems: Fiberglass insulation shall be outlined in the North American Insulation Manufacturing Association (MAIMA 202-96) specifications, or equal with an R-value of 19 when not compressed. The fiberglass shall be faced on the interior exposure with WMP-10 as produced by Lamtec Corporation. Equal products are

acceptable. The composite of fiberglass and facing shall have surface burning characteristics not to exceed 25 flame spread and 50 smoke developed when tested in accordance with U.L. 723 test method or ASTM E84 test method.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine areas scheduled to receive insulation to insure protection against inclement weather and other hazards and work of proceeding trades in completed. Proceed with installation when conditions are satisfactory.

3.2 INSTALLATION

A. General:

1. Fit insulation panels snugly together and to edges. Maintain integrity of insulation over entire area to be insulated. Insulate small areas between closely spaced building components. Cut and fit insulation around pipes, conduits, and other obstructions.

B. Seal joints on inside face of insulating units with vapor barrier type facing, with self-adhesive vapor barrier tape, and tape over punctures and seal at edges of coverage and at penetrating elements, so as to form a complete vapor barrier for expanse of insulation in each area.

C. Install in full accordance with manufacturer's specifications and relevant federal specifications.

D. Provide minimum 3" clearance at recessed light fixtures in ceiling.

E. Vapor barrier shall face warm side.

...END OF SECTION 07210

SECTION 07270

FIRESTOPPING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SECTION INCLUDES

A. Firestopping materials and accessories.

1.3 SYSTEM DESCRIPTION

A. Firestopping Materials: Complete systems of materials tested under ASTM E119 ASTM E814 UL 263 UL 1479 to achieve a fire rating as noted on Drawings.

B. Surface Burning: ASTM E84 UL 723 with a flame spread / smoke developed rating of 0/0

C. Firestop all interruptions to fire rated assemblies, materials and components.

1.4 SUBMITTALS

A. Product Data: Provide data on product characteristics, performance and limitation criteria.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Schedule: Provide a schedule of openings and penetrations requiring firestopping and firesafing. Correlate with products submitted, fire ratings, and testing agency test results.

PART 2 PRODUCTS

2.1 FIRESTOPPING MATERIALS

A. Manufacturers:

1. Isolatek International (Cafco Products).
2. Specified Technologies Inc.
3. 3M Fire Protection Products.
4. United States Gypsum Co.

B. Firestopping Material: Mineral fiber stuffing insulation.

1. USG Thermafiber Safing Insulation.

a. Density: 4.0 lb/cu ft.

C. Firestopping Material: Single component mortar compound.

1. Cafco TPS Mortar.
2. SpecSeal Fire Rated Mortar SSM

3. USG Firecode Compound.

D. Firestopping Material: Single component elastomeric compound.

1. Cafco TPS Type C.
2. SpecSeal Latex Sealant LC150
3. 3M Fire Barrier CP 25WB+ Caulk.
4. USG Smoke-Seal Compound.
5. Hilti Incorporated

2.2 ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.

B. Dam Material: Permanent:

1. As required by manufacturer to meet system listing.

C. Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify openings are ready to receive the work of this section.

B. Clean substrate surfaces of matter which may effect bond of firestopping material.

C. Install backing materials to arrest liquid material leakage.

3.2 APPLICATION

A. Apply primer and materials in accordance with manufacturer's instructions.

B. Apply firestopping material in sufficient thickness to achieve rating, in manner consistent with tested and listed assemblies.

C. Install material at openings and edge of floor slabs requiring firestopping.

D. Install material at walls or partition openings which contain penetrating sleeves, piping, duct work, conduit and other items, requiring firestopping.

E. Protect installed firestopping from damage during construction operations.

...END OF SECTION 07270

SECTION 07460

SHEET METAL SIDING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes prefinished steel siding for walls, related trim, flashings, accessories, and fastenings.

1.2 SUBMITTALS

A. Product Data: Submit data indicating materials, component profiles, fastening methods, jointing details, sizes, surface texture, finishes, and accessories.

B. Samples: Submit two samples 10 x 10 inch in size illustrating surface texture and color.

C. Submit two additional samples to Section 09900 for application of field applied coatings.

1.3 WARRANTY

A. Furnish one (1) year manufacturer warranty for

B. Prefinished siding products deterioration of finish.

PART 2 PRODUCTS

2.1 SIDING

A. Manufacturers: (As distributed by Applicator's Sales and Service)
   1. Ideal Roofing Co.
      a. Interior Liner Panel = Pocket Rib
      b. Exterior Metal Siding = Universal Rib

B. Product Description: Furnish prefinished steel exterior and interior liner panel siding.

2.2 COMPONENTS

A. Exterior Wall Panel: Preformed, Prefinished Galvanized Steel: Minimum 0.026 inch, 24 gauge thick sheet stock. Color as selected from manufacturer's complete color line.

B. Interior Liner Panel: Preformed, Prefinished Galvanized Steel: Minimum 0.026 inch, 24 gauge thick sheet stock. Color as selected from manufacturer's complete color line.

2.3 ACCESSORIES

A. Screws: Hot dipped galvanized type, non-staining, prefinished to match siding finish.

B. Flashings: 24 gauge thick metal to match siding.

C. Accessory Components: Non-vented soffits, fascias, and trim of same material and finish as siding.

2.4 FABRICATION

A. Exterior Panel Siding:
1. Sheet Size: 36 inch wide sheet, 1 ½ inch thick. Panel heights vary, reference drawings.
2. Preformed factory profile.
3. Over lap edges.
4. Surface Texture: Grooved.

B. Interior Metal Liner Panels:
1. Sheet Size: 24 inch wide sheet, ¾ inch thick. Panel heights vary, reference drawings.
2. Preformed factory profile.
3. Over lap edges.
4. Surface Texture: Grooved.

2.5 SHOP FINISHING

A. Pre-finish Color: Color from manufacturer's complete color line.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install metal flashings at internal and external corners, sills, horizontal joints of sheet materials.

B. Install corner strips, closures and trim.

C. Install sealant to prevent weather penetration. Maintain neat appearance.

D. Fastening spacing per manufacturer's standards.

E. Installation shall conform to manufacturer's standard recommendations.

...END OF SECTION

SECTION 07530
ELASTOMERIC SHEET ROOFING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1specification sections, apply to work of this section.

1.02 SECTION INCLUDES

A. Elastomeric Sheet Membrane Conventional Roofing System with vapor retarder, insulation, roofing membrane expansion joints, mechanically attached.

1.03 SYSTEM DESCRIPTION

A. Elastomeric sheet membrane roof assembly including structure and ceiling under to conform to requirements for a UL Class A fire rated assembly, and FM I 90 requirements for wind uplift resistance.

1.04 SUBMITTALS

A. Product Data: Provide characteristics on membrane materials, flashing materials, insulation and walkway pads.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with UL 790 (Underwriters Laboratories Inc.) Class A Fire Hazard Classification. FM 4470 (Factory Mutual Engineering Corporation) - Roof assembly Classification wind uplift requirement of I-90, FM Construction Bulletin 1-28, Class 1 A Construction.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not install membrane during inclement weather or when air temperature may fall below 40 degrees F.

1.07 WARRANTY

A. Provide ten year warranty under provisions of Section 01001 including coverage of materials and installation and resulting damage to building resulting from failure to resist penetration of moisture.

PART 2 – PRODUCTS

2.01 MEMBRANE MATERIALS

A. Manufacturers:

1. Carlisle Syntec Systems.

2. Celotex Corp.

3. Dunlop Construction Products Co.

4. Firestone Building Products Co.

5. Goodyear Tire and Rubber Co.

6. Schuller Roofing Systems.

B. Membrane: EPDM; 0.045 inch thick.

C. Seaming Materials: As recommended by membrane manufacturer.

2.02 MEMBRANE FASTENING

A. Insulation Adhesive: Type recommended by insulation manufacturer.

B. Mechanical Fasteners: Manufacturer's standard type for application intended.

2.03 INSULATION MATERIALS

A. Manufacturers:

1. As approved by manufacturer of roofing membrane.

B. Insulation: ASTM C 1289-95 Type II, polyisocyanurate closed cell foam core with manufacturer's standard facing; thicknesses as indicated, square edges, R value of 6.0 per inch thickness..

C. Separation Sheet: As recommended by roofing membrane manufacturer for application intended.

D. Insulation Adhesive: As recommended by insulation manufacturer.

2.04 ACCESSORIES

A. Flexible Flashings: Same material as membrane, black color; manufactured by roofing membrane manufacturer.

B. Prefabricated Control or Expansion Joint Flashing: Sheet EPDM with foam filler, and metal edge flashings: Schuller Expand-O-Flash or equal.

C. Fiber Cant Strips: Asphalt impregnated wood fiberboard.

D. Roofing Fasteners: Galvanized or non-ferrous type as recommended by membrane manufacturer.

E. Sealants: As recommended by membrane manufacturer.

F. Walkway Pads: As recommended by membrane manufacturer

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work; deck is clean and smooth, free of snow or ice; properly sloped to drains.

B. Verify roof openings, curbs, and protrusions through roof are solidly set; wood cant strips and reglets are in place.

C. Verify adjacent precast concrete roof members do not vary more than 1/4 inch in height. Verify grout keys are filled flush.

3.02 PREPARATION

A. Fill concrete surface honeycomb and variations with latex filler.

3.02 VAPOR RETARDER APPLICATION

A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.

B. Extend vapor retarder under cant strips and blocking to deck edge.

3.03 INSULATION APPLICATION

A. Embed into insulation adhesive and mechanically fasten insulation to deck in accordance with insulation manufacturer's instructions.

B. Lay second layer of insulation with joints staggered from first layer.

C. Minimum Total Insulation Thickness: As required to achieve an average insulation R-value of 38.

D. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

3.04 MEMBRANE APPLICATION

A. Apply membrane and mechanical attachment devices in accordance with manufacturer's instructions.

B. Roll out membrane. Work out air bubbles, wrinkles, and fish mouths.

C. Overlap edges and ends and solvent seal watertight.

D. Install mechanical fasteners in accordance with manufacturer's instructions and UL and FM ratings.

E. Seal membrane to adjoining surfaces.

F. Shingle joints on sloped substrate in direction of drainage. Apply joint sealant.

G. Continue membrane up vertical surfaces minimum 8 inches unless otherwise noted. Reinforce membrane with multiple thickness of membrane material over joints.

H. Seal items penetrating membrane with counter flashing membrane material. Install membrane flashings. Seal watertight to membrane.

I. Place walkway units at locations noted.

3.05 FLASHINGS AND ACCESSORIES

A. Apply flexible flashings to seal membrane to vertical elements.

B. Install prefabricated roofing expansion control joints to isolate roof into areas as indicated in accordance with manufacturer's instructions.

C. Coordinate installation of roof drains sumps and related flashings.

D. Seal flashings and flanges of items penetrating membrane.

END OF SECTION 07530

SECTION 07610

SHEET METAL ROOFING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes pre-finished galvanized steel roofing and associated flashings, and gutters and downspouts.

1.02 SYSTEM DESCRIPTION

A. Metal Roofing System: Conform to criteria of SMACNA "Architectural Sheet Metal Manual."

1. Standing seam roofing: SMACNA Details
2. Gutters: SMACNA Details
3. Downspouts: SMACNA Details
4. Flashings: SMACNA Details

B. Gutters and Downspouts: Size components for rainfall intensity determined by a storm occurrence of 1 in 10 years in accordance with SMACNA recommendations.

1.03 SUBMITTALS

A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, termination, and installation details.

B. Samples: Submit two samples, of metal roofing mounted on plywood backing illustrating typical seam, external corner, internal corner, valley, ridge, junction to vertical dissimilar surface, material, color, and finish.

1.04 WARRANTY

A. Provide twenty year manufacturer warranty for finishes.

PART 2 - PRODUCTS

2.01 SHEET METAL ROOFING

A. Fabricators:

1. ideal roofing H-F 16: As supplied by Applicator's Sales

B. Product Description: Metal roofing of brake formed metal sheets; standing seam; prefinished. This section also includes sheet metal gutters and downspouts.

2.02 COMPONENTS

A. Pre-Finished Galvanized Steel Sheet: ASTM A653/A653M, G90 (Z275) zinc coating; 24 gage core steel, shop pre-coated with PVDF (polyvinylidene fluoride) coating, color as selected from manufacturer's standard

2.03 ACCESSORIES

A. Fasteners: Stainless steel

B. Underlayment: ASTM D226 No. 30 asphalt saturated roofing felt.

C. Protective Backing Paint: FS TT-C-494, bituminous.

D. Sealant: Exterior metal lap joint butyl or polyisobutylene sealant as specified in Section 07900.

E. Plastic Cement: ASTM D4586, Type I.

F. Reglets: Surface mounted Recessed type, galvanized steel

G. Eave Protection Sheet: Rubberized asphalt bonded to sheet polyethylene, 40 mil (1 mm) total thickness, with strippable treated release paper.

2.04 FABRICATION

A. Form components true to shape, accurate in size, square, and free from distortion or defects. Form pieces in longest practical lengths.

B. Fabricate cleats and starter strips of same material as sheet, continuous, interlockable with sheet.

C. Hem exposed edges on underside, miter and seam corners. Fabricate vertical faces with bottom edge formed outward and hemmed to form drip.

D. Fabricate flashings to allow toe to extend 2 inches (50 mm) over roofing gravel paver. Return and brake edges.

E. Form joints as indicated. At moving joints, use sealed lapped, bayonet-type, or interlocking hooked seams.

F. Fabricate corners in one piece, long legs; seam for rigidity, seal with sealant.

G. Form sheet metal pans with upstand, and flanges.

2.05 SHOP FINISHING

A. Manufacturer's standard four coat protection system. (ASTM-A-653 Grade 80, Z275 (G-90)): 8000+ Series.

1. Product: Baked 8000 Series four coat paint system.

B. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system as recommended by finish system manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify roof openings, roof penetrations, cant strips and reglets in place, and nailing strips are properly located.

B. Verify deck is dry and free of snow or ice. Verify joints in wood deck are solidly supported and fastened.

3.02 PREPARATION

A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil (0.4 mm).

B. Prepare wood deck to fill knots before eave protection.

3.03 INSTALLATION

A. Eave (Ice Dam) Protection: Place eave edge and gable edge metal flashings tight with fascia boards. Weather lap joints and seal with plastic cement. Secure flange with nails.

1. Apply eave protection sheet.
2. Extend eave protection sheet minimum 4 feet upslope beyond interior face of exterior wall.

B. General Roofing Installation Requirements:

1. Apply underlayment over entire roof area in single layer laid perpendicular to slope; weather lap edges 2 inches (50 mm) and nail in place. in 2 layers; the first layer laid parallel to slope with joints lapped 6 inches (150 mm), second layer laid perpendicular to slope with 2 inch (50 mm) lapped edges. Minimize nail quantity.

2. Use plastic cement for joints between metal and bitumen and for joints between metal and felts.

3. Provide formed metal pans for protrusions through roof. Fill pans watertight with plastic cement.

C. Gutters and Downspouts Installation.

1. Provide integral gutters and downspouts of solid copper.
2. Conform to SMACNA CDA details

D. Flashing Installation:

1. Conform to SMACNA details

END OF SECTION 07610

SECTION 07620

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section includes flashings and counter flashings gutters and downspouts and fabricated sheet metal items.

1.2 SYSTEM DESCRIPTION

A. Sheet Metal System: Utilize Standard SMACNA "Architectural Sheet Metal Manual Details."

B. Gutters and Downspouts: Size components for rainfall intensity determined by storm occurrence of 1 in 5 years in accordance with SMACNA recommendations.

1.3 SUBMITTALS

A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, termination, and installation details.

B. Samples: Submit (1) 6" samples of actual size of each type of formed metal flashing illustrating typical seam, external corner, internal corner, material, color, and finish.

1.4 WARRANTY

A. Furnish five year manufacturer warranty for finishes.

PART 2 PRODUCTS

2.1 SHEET METAL FLASHING AND TRIM

A. Fabricators: (Equal to)

1. Cheney Flashing Co.
2. Keystone Flashing Co.
3. Metal-Era Inc.
4. Ideal Roofing Co.

B. Product Description: Flashing and sheet metal; unfinished or prefinished, including gutters, downspouts, pads and accessories.

2.2 COMPONENTS

A. Pre-Finished Galvanized Steel Sheet: ASTM A924/A924M, Grade A, or ASTM A653/A653M, G90 (Z275) zinc coating; 24 gage core steel, shop pre-coated with PVDF (polyvinylidene fluoride) coating; color as selected from manufacturer's complete color line.

2.3 ACCESSORIES

A. Fasteners: Galvanized steel with soft neoprene washers.

B. Gutter and Downspout Anchorage Devices: In accordance with SMACNA requirements.

C. Gutter Supports: Straps.

D. Downspout Supports: Straps.

E. Underlayment: No. 30 asphalt saturated roofing felt.

F. Protective Backing Paint:: Zinc molybdate alkyd.

G. Slip Sheet: Rosin sized building paper.

H. Sealant: Exterior metal lap joint butyl or polyisobutylene sealant as specified in Section 07900.

I. Plastic Cement: ASTM D4586, Type I.

2.4 FABRICATION

A. Gutter Accessories: Profiled to suit gutters and downspouts.

B. Splash Pads: Precast concrete type, of 12" x 12" and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.

C. Downspout Boots: Steel.

D. Form components to shape indicated on Drawings, accurate in size, square, and free from distortion or defects. Form pieces in longest practical lengths.

E. Fabricate cleats and starter strips of same material as sheet, to interlock with sheet.

F. Hem exposed edges on underside 1/2 inch miter and seam corners. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

G. Fabricate flashings to allow toe to extend 2 inches over roofing. Return and brake edges.

H. Form material with standing seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

I. Fabricate corners in one piece, 18 inch long legs; seam for rigidity, seal with sealant.

J. Form sheet metal pans with upstand, and flanges.

2.5 SHOP FINISHING

A. PVDF (Polyvinylidene Fluoride) Coating: High Performance Organic Finish, AAMA 2604 or 2605; multiple coat, thermally cured fluoropolymer finish system.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

B. Verify membrane termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to minimum dry film thickness of 15 mil.

3.3 INSTALLATION

A. Install starter and edge strips, and cleats.

B. Install surface mounted reglets. Seal top of reglets with sealant. Insert flashings to form tight fit. Seal flashings into reglets with sealant.

C. Secure flashings, gutters and downspouts in place using [concealed] fasteners.

D. Apply plastic cement compound between metal work and felt flashings.

E. Fit components tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

F. Install sheet metal pans surrounding roof penetrations. Fill pans watertight with plastic cement.

G. Slope gutters 1/4 inch per foot minimum.

H. Connect downspouts to downspout boots system. Seal connection watertight.

I. Set splash pads under downspouts.

J. Seal joints watertight.

K. Install snow guards as indicated on Drawings.

...END OF SECTION

SECTION 07724

ROOF HATCHES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes prefabricated roof hatches operable hardware, and Counterflashings.

1.2 SUBMITTALS

A. Product Data: Submit data on unit construction, sizes, configuration, jointing methods and locations when applicable, and attachment method.

PART 2 PRODUCTS

2.1 ROOF HATCHES

A. Manufacturers: (Equal to)

1. Bilco Type "S" Roof Scuttle

B. Product Description: Shop fabricated roof hatches and vents, support curb; operating hardware; smoke and heat vents.

C. Unit: 3'0" x 2'6" size, single leaf type listed by UL.

D. Integral Steel Curb: Galvanized steel with rigid glass fiber insulation; integral cap flashing to receive roof flashing; extended flange for mounting.

E. Cover: Prime painted steel; glass fiber insulation; sandwiched by steel interior liner; continuous thermaplastic rubber gasket to provide weatherproof seal.

F. Hardware:
1. Compression spring operator and shock absorbers.
2. Steel manual pull handle for interior and exterior operation; padlock hasp.
3. Steel hold open arm with vinyl covered grip handle for easy release.
4. Hinges: Manufacturer's recommended type for specific type of hatch.
5. Provide with operational safety post.

2.2 FABRICATION

A. Fabricate components free of visual distortion or defects. Weld corners and joints.

B. Fit components for weather tight assembly.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install curb assembly, fastening securely to roof decking.

B. Place roof hatch and secure to curb assembly. Install integral setting sealant and counterflashing as required for Project conditions.

C. Coordinate with installation of roofing system and related flashings for weather tight installation.

D. Apply bituminous paint on surfaces of units in contact with cementitious materials or dissimilar metals.

...END OF SECTION

SECTION 07900

CAULKING AND SEALANTS

PART 1 GENERAL

1.1 WORK SPECIFIED HEREIN

A. All labor, materials, equipment and services necessary to furnish all sealants and related materials and perform all caulking as indicated or specified.

1.2 SUBSTITUTIONS

A. In accordance with Section 01600.

1.3 SUBMITTALS

A. Submit samples in accordance with Section 01340 for all work under this Section. Submit samples of all materials specified herein, in quantity directed for approval. Sealant samples shall be color proposed for use.

B. Caulk a section of joint (at all job conditions requiring caulking) at least seven (7) days prior to start of caulking for review by the Architect. When approved, this sample shall be used as a standard of comparison for the remainder of the work.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver sealant to the job site in sealed containers, each bearing manufacturer's name and product designation.

1.5 JOB CONDITIONS

A. Do not apply sealants in temperatures or to material below 40°F.

B. Caulk joints before final coat of paint or before application of any clear or stain waterproofing compounds.

C. Do not apply sealants to surfaces that are wet.

PART 2 PRODUCTS

2.1 MATERIALS

A. Sealant shall be single component polyurethane base sealant, in colors selected. Sealants shall conform to ASTM C920 as follows:

Traffic Joints	Type S, Grade P, Class 25, Use T
Horizontal Joints	Same as Traffic Joints
Other Joints	Type S, Grade NS, Class 25, Use NT, M, A, O

B. All sealants used on exterior of project are to be (single) component (polyurethane) base, including inside surface of exterior joints.

C. All sealants used on interior of project are to be (single) component (acrylic latex) base.

D. Primer: Where required, shall be used as recommended, in writing, by the manufacturer. The primer shall have been tested for non-staining characteristics and durability on samples of actual surfaces to be sealed.

E. Back-up materials and preformed joint fillers shall be non-staining, compatible with sealant and primer, and of a resilient nature, such as closed cell polyethylene rod, closed cell urethane or Neoprene rod, or elastomeric tubing or rod (Neoprene, butyl, or EPDM). Materials impregnated with oil, bitumen or similar materials shall not be used. Size and shape shall be as indicated by joint details on Drawings and shall be as recommended by sealant manufacturer in writing. Sealant shall not adhere to back-up material.

F. Bond Breakers: Where required, shall be polyethylene tape (or equal) as recommended by manufacturer of sealant, in writing.

G. Solvents, cleaning agents and other accessory materials shall b as recommended by sealant manufacturer in writing.

PART 3 EXECUTION

3.1 WORKMANSHIP

A. General:

1. Qualified applicators shall apply sealants in conformance with manufacturer's written directions.

2. Examine all surfaces and report all conditions not acceptable.

3. Apply sealant under pressure with hand or power actuated gun or other appropriate means. Gun shall have nozzle of proper size and provide sufficient pressure to completely fill joints as designed.

4. All joint surfaces shall be tooled to provide the contour as indicated.

B. Preparation:

1. Thoroughly clean all joints, removing all foreign matter such as dust, oil, grease, water, surface dirt and frost. Sealant must be applied to the base surface. Previously applied paint or primer must be entirely removed.

2. Porous materials such as concrete or masonry shall be cleaned where necessary by grinding, blast-cleaning, mechanical abrading, acid washing or combination of these methods to provide a clean, sound base surface for sealant adhesion.

3. Laitance shall be removed by acid washing, grinding or mechanical abrading.

4. Form oils shall be removed by blast-cleaning.

5. Loose particles present or resulting from grinding, abrading or blast-cleaning shall be removed by blowing out joints with oil-free compressed air (or vacuuming) prior to application of primer or sealant.

6. Non-porous surface, such as metal and glass, shall be cleaned either mechanically or chemically. Protective coating on metallic surfaces shall be removed by a solvent that leaves no residue. Solvent shall be used with clean cloths or lintless paper towels. Do not allow solvent to air dry without wiping. Wipe dry with clean, dry cloth or lintless paper towels.

7. Joint areas to be protected with masking tape or strippable films shall be cleaned before application of tape or film.

8. All joints to receive sealant shall be as indicated on shop or project drawings. Do not seal joints until they are in compliance with drawings; or meet with the approval of the Architect.

9. For joints in metal, glass and other non-porous surfaces: sealant depth shall be a minimum of 1/2 the applied sealant width, and shall in no case exceed the applied sealant width.

10. Joints to receive sealant, back-up material or pre-formed joint filler shall be cleaned out, raked to full width and depth as required.

11. Joints shall be of sufficient width and depth to accommodate specified back-up material or preformed joint filler and sealant.

C. Application:

1. Install back-up material or joint filler, of type and size specified, at proper depth to provide sealant dimensions as detailed. Back-up material shall be of suitable size and shape; and compressed 25-50% to fit joints as required. Sealant shall not be applied without back-up material and/or bond breaker strip. When using back-up tube avoid lengthwise stretching. Tube or rod shall not be twisted or braided.

2. Apply masking tape, where required, in continuous strips in alignment with joint edge.

3. Prime surfaces, where required, with primer as recommended by sealant manufacturer.

4. Follow sealant manufacturer's instructions regarding mixing (if required), surface preparation, priming, application life, and application procedure.

5. Apply, tool and finish sealant as required. When tooling sealants, use tooling solution recommended by sealant manufacturer. Remove masking tape immediately after joints have been tooled.

6. Clean adjacent surfaces of sealant as work progresses. Use solvent or cleaning agent as recommended by sealant manufacturer.

7. All finished work shall be left in a neat, clean condition.

PART 4 SCHEDULE

4.1 GENERAL

A. Provide caulking at the following locations. This schedule is not to be construed to be complete. Provide caulking at other areas as indicated.

B. Control joints in masonry surfaces, interior and exterior.

C. Control joints in concrete surfaces, interior and exterior.

D. Perimeter of door frames, interior and exterior.

E. Perimeter of window frames, interior and exterior.

F. Perimeter of louvers and grilles, interior and exterior.

G. Perimeter of aluminum sections, interior and exterior.

H. Perimeter and joints at plywood in water treatment area.

Note: At interior partitions caulking is required at all joints between dissimilar materials where the joint width exceeds 1/16".

...END OF SECTION 07900

SECTION 07920

JOINT SEALANTS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.02 SUMMARY

A. This Section includes joint sealants for the following locations:

1. Interior, horizontal joints subject to forklift traffic.
    a. Contraction joints in cast-in-place concrete.
    b. Joint around perimeter of all floor drains
    c. Joint around perimeter of building.

B. Related Sections: Following Sections contain requirements that relate to this Section:

1. Cast-in-Place Concrete: Section 03300.

1.03 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide epoxy 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.

1.04 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data from manufacturers for each joint sealant product required.

1. Certification by joint sealant product plus the primers and cleaners required for sealant installation comply with local regulations controlling use of volatile organic compounds.

C. Certificates from manufacturers of joint sealants attesting that their products comply with specification requirements and are suitable for the use indicated.

D. Qualification data complying with requirements specified in "Quality Assurance" article. Include list of completed projects with project names, addresses, names of Architects and Owners, plus other information specified.

E. See requirements of Division 1 Section, "Submittal Procedures," Part 1 heading, "Submittal Procedures," for limits to resubmittals.

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.

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 or below 40 deg. F.
2. When joint substrates are wet.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than or greater than that 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. Colors: Verify with Architect

2.02 SLAB JOINT SEALANTS

A. Accepted slab joint sealants:

1. "Euco 700" Euclid Chemical Company, Cleveland, OH
2. "Epolith-P" Sonneborn, Minneapolis, MN.
3. Approved equal.

B. Packing and backer rod: See heading, "Joint Sealant Backing."

C. Compounds used sealants shall not stain concrete. Aluminum pigmented compounds not acceptable.

2.03 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. Acceptable backer rod products:

a. "Sonneborn Soft Type Backer Rod," Sonneborn, Minneapolis, MN.
b. Approved Equal.

C. Bond-Breaker Tape: Polythylene 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.

2.04 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer 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 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 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 compressor.
3. Remove laitance and form release agents from concrete.

B. Joint Priming: Prime joint substrates, no exceptions. 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. Remove any spillage or migration.

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 indicted, 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 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.
   c. Remove absorbant joint fillers that have become wet prior to sealant application and replace with dry material.

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.

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.

END OF SECTION

Part II
Division 8

Doors and Windows

SECTION 08100

METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Provide metal doors, and metal door and window frames, which are not specifically described in other Sections of these Specifications, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Metal Door Installation - see Section 06200

3. Hardware - see Section 08700

4. Hardware Installation - see Section 06200

5. Painting - see Section 09900

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Unless specifically otherwise approved by the Architect, provide all products of this Section from a single manufacturer.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product Data: Within 20 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section.

2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

3. Shop Drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation and anchorage.

4. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

PART 2 PRODUCTS

2.1 GENERAL

A. Provide hollow metal doors and frames manufactured by a single firm specializing in the production of this type of work.

B. Provide doors and frames complying with the Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames": (SDI 100), and as herein specified.

C. Manufacturers offering products to comply with the requirements for hollow metal doors and frames include the following:

1. Amweld Building products Division, American Welding and Manufacturing Co.
2. Ceco Corporation
3. Pioneer
4. Curries Company
5. Republic Builders Products Company

2.2 FIRE RATED ASSEMBLIES

A. Wherever a fire-resistance classification (3 hour, 1-1/2 hour, etc., or "A", "B", etc.) is shown or scheduled for hollow metal doors, provide fire rated hollow metal doors and frames that have been investigated and tested as a fire door assembly, complete with type of fire door hardware to be used in the work. Identify each fire door and frame with UL labels, indicating the applicable fire rating of both door and frame.

B. Construct and install assemblies to comply with NFPA Standard No. 80, and as herein specified.

2.3 MATERIALS

A. Hot Rolled Steel Sheets and Strips

1. Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.

B. Cold Rolled Steel Sheets:

1. Commercial quality carbon steel type E, matte-finish complying with ASTM A 366 and ASTM A 568.

C. Hot-dip Galvanized Steel Sheets

1. Zinc-coated carbon steel sheets of commercial quality complying with ASTM A 526, with 1.25 oz "Commercial" zinc coating, mill-phospatized, complying with ASTM A 525.

D. Supports and Anchors

1. Provide units galvanized after fabrication, where built into exterior walls, complying with ASTM A 153, Class B.

E. Inserts, Bolts, and Fasteners

1. Provide manufacturer's standard units, except hot-dip galvanize all items to be built into exterior walls, complying with ASTM A 153.

F. Shop-Applied Paint

1. Provide manufacturer's standard shop-applied baked-on prime-coat paint to all metal surfaces.

2. Primer for galvanized surfaces: Provide a zinc-duct/ zinc-oxide prime paint, complying with FS-TT P 641 (Type II).

2.4 METAL DOORS

A. Provide hollow metal doors of the types and styles indicated on the Drawings or Schedules and complying with SDI 100 for minimum materials and construction requirements. All hollow metal doors and panels shall be Type II, Heavy Duty, Style 3, doors shall be 16 gauge galvanized steel. All doors and panels shall be either closed with a recessed channel and closure or provided with flush and closure treatment per manufacturer's standards. The top and bottom of all panels shall be same as required for vertical edges. Follow details on Drawings for edge profile at top of door and bottom of panel where they meet.

2.5 METAL FRAMES

A. Provide metal frames for doors and other openings as shown on the Drawings and Schedules. Conceal all fastenings unless otherwise shown. Countersink exposed screws using Phillips flat head screws.

B. Fabricate metal door frames from 16 gauge sheet steel (exterior door frames shall be 14 gauge galvanized steel). Frames shall be combination type with integral stop and time head assemblies to be reinforced internally at each miter joint with 18 gauge channel shaped reinforcements. Equip frames with one welded-in floor anchor in each jamb. Three field inserted steel lock-in anchors (maximum of 24" o.c.) shall also be provided for each jamb. Anchor to construction involved (i.e. woodframe, masonry, concrete or steel stud). All frames will be fabricated to fit surrounding wall construction snugly, no plastic, vinyl, or other filler will be accepted.

1. Frames for masonry openings shall have self-aligning tabs and slots for secure locking and shall be mitered and continuously arc-welded on the frame face (spot welded at corners) to form a one-piece neat mitered corner assembly.

2. Frames for drywall openings shall be provided for installation after the wall is erected. Head frame shall be supplied with an oval countersunk head sheet metal screw, located out of view, for securing the header and jambs. Headers and jambs shall have mating tabs and slots for alignment of the assembly. All corners shall present neat mitered joints. Each jamb member shall have two welded-in steel stiffeners to maintain a tight grip on the wall and shall be equipped with welded-in sill anchors.

C. Rubber Door Silencers: Drill stops to receive 3 silencers on strike jambs of single-swing frames and 4 silencers on heads of double-swing frames. Install plastic plugs to keep holes

clear during construction.

D. Plaster Guards: Provide 22 gauge steel plaster guards or mortar boxes welded to the frame, at the back of all finish hardware cutouts where mortar or other materials might obstruct hardware operation.

PART 3 EXECUTION

3.1 GENERAL

A. Fabricate hollow metal units to be rigid, neat in appearance and free from defects, accurately formed to the required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment to assure proper assembly at the project site. Dress all welded joints on exposed surfaces flush and smooth, to be invisible when prime painted. Use of metallic filler to conceal manufacturing defects is not acceptable.

3.2 FINISH HARDWARE PREPARATION

A. Prepare hollow metal units at the manufacturer's plant to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling, and tapping. Comply with applicable requirements of ANSI A-15 "Specifications for Door and Frame Preparation". Prepare for other mortised and concealed finish hardware to the templates of the manufacturer of each finish hardware item required in the work.

B. Reinforce hollow metal units at the manufacturer's plant to receive surface-applied hardware. Drill and tap for surface applied finish hardware at the project site during installation.

3.3 MOLDING LOCATIONS

A. Provide moldings around solid, glazed or louvered panels in hollow metal units for a rigid and secure installation.

B. Provide non-removable molding on the outside of exterior hollow metal units and the corridor side of interior hollow metal units.

C. Provide removable moldings at other locations, unless otherwise shown.

3.4 PLACING FRAMES

A. Place frames prior to the construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction in completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

B. Install fire-rated frames in accordance with NFPA Standard No. 80.

C. In drywall metal stud partitions, follow manufacturer's recommendations for installation of frames.

3.5 FINISH HARDWARE AND DOOR INSTALLATION

A. Finish hardware and door installation is included under Section 06200.

3.6 CLEARANCES

A. Fire rated doors shall be manufactured and installed with clearances as specified by NFPA Standard No. 80.

B. All doors shall be manufactured and installed with clearances specified by SDI 100.

3.7 ADJUST AND CLEAN

A. Final Adjustments:

1. Check and readjust operating finish hardware items in hollow metal work just prior to final inspection.

2. Leave work in compete and proper operating condition.

3. Remove defective work and replace with work complying with the specified requirements.

B. Immediately after erection, sand smooth all rusted and damaged areas of prime coat, and apply touchup of compatible air-drying primer.

...END OF SECTION 08100

SECTION 08360

SECTIONAL OVERHEAD DOORS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

A. Overhead sectional door of steel panels of flush design.

B. Electric operation.

1.3 SYSTEM DESCRIPTION

A. Operating System for all overhead doors less than 9'-0" in width: Conform to the following criteria:

1. Manual operation with operation requiring a maximum exertion of 25 lbs. force.

B. Operating System for all overhead doors greater than 9'-0" in width: Conforming to the following criteria:

1. Electric operation on 120 volt, single phase, 60 Hz service to ½ HP motor, manually operable in case of power failure, transit speed of 12 inches per second.

1.4 SUBMITTALS

A. Shop Drawings: Indicate opening dimensions and tolerances, component construction, connections and details, anchorage methods and spacing, hardware and locations and installation details.

B. Product Data: Provide data on electric operating devices.

C. Operating and Maintenance Instructions: Include data for motor and transmission, shaft and gearing, lubrication frequency, control adjustments, spare part sources.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers:

1. Overhead Door Corp. Model 591 Series.

2. or Equals

B. Sheet Steel: ASTM A526/A526M hot-dipped galvanized to G60, roll formed with v-groove for ribbed effect.

C. Metal Paint: Manufacturer's standard polyester type system.

D. Insulation: Rigid polystyrene same thickness as core framing members; bonded to facing.

E. Glazing: Tempered 1/4 inch thick.

F. Weatherstripping: Resilient neoprene strip.

G. R-value of 14 minimum.

2.1 COMPONENTS

A. Panels: 1 5/8" thick Thermacore Insulated Steel of R-14.86. Exterior steel: .016" thick. Exterior Surface: Ribbed Textured. Rigid foam core insulation; thermally broken, rabbeted weather joints at meeting rails; insulated.

B. Glazed Lights: Tempered glazing for three 24x8" glazed lights per panel; set in place with resilient glazing channel. .

C. Track: Full Vertical Track at all locations practicable. Rolled galvanized steel, 16 gage thick; 3 inch wide, continuous one piece per side; galvanized steel mounting brackets 14 gage thick.

D. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel.

E. Door Panel Weatherstripping: Fitted to bottom of door panel full length; double contact resilient.

F. Jamb Weatherstripping: Formed metal retainer fitted full height of jamb with integral resilient weatherstripping in moderate contact with door panels.

G. Lift Mechanism: Torsion spring on cross head shaft, with braided steel lift cables.

H. It is the intent of this specification that all overhead doors open to the fullest extent of the designated opening indicated within the Door Schedule. All doors shall be sized and configured to allow the full opening height and width remain clear upon the door being in the open position.

I. Electric Operator: Nema Type 1 motor; center mounted draw bar assembly; adjustable safety friction clutch, gear driven limit switch; magnetic cross line reversing starter, mounting brackets and hardware.

J. Control Station: Standard three button (open-close-stop) momentary type, separate control for each electric operator; surface mounted. Include key operated switch located at exterior location indicated.

2.2 FINISHES

A. Prefinished Steel: Color as selected by Architect.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within limits.

B. Prepare door opening components to permit installation of door unit and preserve continuity of wall air barrier and vapor retarder seal.

3.2 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Anchor components securely to wall construction and building framing without distortion or stress. Secure tracks to structural members only.

C. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.

D. Coordinate installation of electrical service. Complete wiring from disconnect to unit components.

E. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.

3.3 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch.

B. Maximum Variation from Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft. straight edge.

...END OF SECTION

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

A. Definition: "Finish Hardware" includes items known commercially as finish hardware which are required for swing, sliding and folding doors.

B. Extent of finish hardware required is indicated on drawings and in schedules.

C. Types of finish hardware required include the following:

1. Hinges.
2. Lock cylinders and keys.
3. Lock and latch sets.
4. Bolts.
5. Exit devices.
6. Bifold door hardware.
7. Closers.
8. Miscellaneous door control devices.
9. Door trim units.
10. Protection plates.
11. Weatherstripping for exterior doors.
12. Sound stripping for interior doors.
13. Astragals or meeting seals on pairs of doors.
14. Thresholds.

D. Silencers included integral with hollow metal frames are specified with door frames elsewhere in Division 8.

1.3 QUALITY ASSURANCE:

A. Manufacturer: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.

B. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFiPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM for types and sizes of doors required and complies with requirements of door and door frame labels.

1. Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors' UL or FM labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL or FM label on exit devices indicating "Fire Exit Hardware".

C. ANSI Standards: Provide hardware that meets or exceeds the performance requirements of ANSI A 156.2 for the following applications:

1. Doors in public areas: Series 4000, Grade 1.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's technical product data for each item of hardware in accordance with Division-1 section "Submittals". Include whatever information may be necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish.

B. Hardware Schedule: Submit hardware schedule in manner indicated below. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware.

C. Hardware Schedule Content: Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Cross reference to designations in door and hardware schedules in Contract Documents.

D. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

E. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Review shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

1.5 PRODUCT HANDLING:

A. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

B. Provide secure lock-up for hardware delivered to the project, but not yet installed. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the work will not be delayed by hardware losses, both before and after installation.

PART 2 - PRODUCTS

2.1 SCHEDULED HARDWARE:

A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in the Finish Hardware Schedule. Products are identified by using hardware designation numbers of the following.

B. Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required, whose product designation is used in the Hardware Schedule for purposes of establishing minimum requirements. Provide either the product designated, or, where more than one manufacturer is listed, the comparable product of one of the

other manufacturers which comply with requirements including those specified elsewhere in this section.

1. Manufacturer: Provide products of one of the following:

   a. Locksets: Corbin, Schlage, Sargent.
   b. Closers: LCN, Norton, Rixson, Sargent.
   c. Hinges: Hager, Stanley.
   d. Panic Devices: Sargent, Von Duprin.
   e. Door Trim and Accessories: Ives, Rockwood.

C. ANSI/BHMA designations used elsewhere in this section or in schedules to describe hardware items or to define quality or function are derived from the ANSI A 156.1 standards. Provide products complying with these standards and requirements specified elsewhere in this section.

2.2 MATERIALS AND FABRICATION:

A. Hand of door: Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door as shown.

B. Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to Architect.

1. Manufacturer's identification will be permitted on rim of lock cylinders only.

C. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for the applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

D. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

E. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed screws to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.

F. Provide concealed fasteners for hardware units which are exposed when door is closed, except to the extent no standard units of the type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use hex screw fasteners.

2.3 HINGES, BUTTS AND PIVOTS:

A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

B. Screws: Furnish Phillips flat-head or machine screws for installation of units, except furnish Phillips flat-head or wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.

C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

1. Steel Hinges: Steel pins.
2. Non-ferrous Hinges: Stainless steel pins.
3. Exterior Doors: Non-removable pins.
4. Out-swing Corridor Doors: Non-removable pins.
5. Interior Doors: Non-rising pins.
6. Tips: Flat button and matching plug, finished to match leaves.

D. Provide only ball bearing hinges at doors with closers.

E. Number of hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90" or less in height.

2.4 LOCK CYLINDERS AND KEYING:

A. General: Lock cylinders and keying shall match and be coordinated with Paradigm Window Solutions master keying system. Supplier will meet with the Architect and Owner to finalize keying requirements and obtain final instructions in writing.

B. Standard System: Shall be coordinated with Southern Maine Medical Center's Standard Key system.

C. Equip locks with manufacturer's special 6-pin tumbler cylinder, with construction master key feature, which permits voiding of construction keys without cylinder removal, or with cylinders for interchangeable-core pin tumbler inserts. Furnish only temporary inserts for the construction period, and remove these when directed.

D. Metals: Construct lock cylinder parts from brass/bronze, stainless steel or nickel silver.

E. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.

F. Key Material: Provide keys of nickel silver only.

G. Key Quantity: Furnish 3 change keys for each lock; 5 master keys for each master system; and 5 grandmaster keys for each grandmaster system.

1. Furnish one extra blank for each lock.
2. Deliver keys to Owner's representative and obtain receipt.

H. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of the number of locks required for the project.

I. Provide lock cylinders and keys for all aluminum storefront door units as part of this specification section. All other aluminum storefront door hardware shall be supplied as part of Section 08410. All door hardware shall be as specified with in this section and the subsequent Door and Door Hardware Schedules.

2.5 LOCKS, LATCHES AND BOLTS:

A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set.

B. Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.

C. Lock Throw: Comply with UL requirements for throw of bolts and latch bolts on rated fire openings. Provide 1/2" minimum throw on other latch and deadlock bolts.

D. Flush Bolt Heads: Minimum of 1/2" diameter rods of brass, bronze or stainless steel, with minimum 12" long rod for doors up to 7'-0" in height.

2.6 CLOSERS AND DOOR CONTROL DEVICES:

A. Type of Units: Overhead surface mounted, parallel arm door closers.

B. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit, depending upon size of door, exposure to weather and anticipated frequency of use.

C. Access-Free Manual Closer-s: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ADA provisions for door opening force and delayed action closing.

2.7 DOOR TRIM UNITS:

A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units (kick plates, edge trim, viewers, knockers, mail drops and similar units); either machine screws of self-tapping screw.

2.8 WEATHERSTRIPPING:

A. General: Except as otherwise indicated, provide continuous weatherstripping at each edge of every exterior door leaf. Provide type, sizes and profiles shown or scheduled. Provide non-corrosive fasteners as recommended by manufacturer for application indicated.

2.10 THRESHOLDS:

A. General: Except as otherwise indicated provide standard thermal barrier aluminum threshold unit of type, size and profile as shown or scheduled.

B. Exterior Hinged/Pivoted Doors: Provide units not less than the width of door jambs, fabricated to accommodate door hardware and to fit door frames.

C. Wheelchair accessibility: Provide units with maximum 1/2" rise and beveled edges, complying with ADA requirements for approach slope and coefficient of friction.

2.11 HARDWARE FINISHES:

A. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening. In general, match items to the manufacturer's standard finish for the latch and lock set (or push-pull units if no latch-lock sets) for color and texture.

B. Provide finishes which match those established by BHMA.

C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness and other qualities complying with manufacturer's standards, but in no case less than specified for the applicable units of hardware by referenced standards.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware" for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Architect. Comply with ADA and the Uniform Federal Accessibility Standard.

B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division-9 sections. Do not install surface-mounted items until finishes have been completed on the substrate.

C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant.

3.2 ADJUST AND CLEAN:

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace items which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and

finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Initial maintenance: Return to the work one month after occupancy and inspect all doors, adjust hardware as necessary for proper operation and instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware finishes.

...END OF SECTION 08710

SECTION 08800

GLAZING

PART 1GENERAL

1.1 DESCRIPTION

A. Work included: Provide glazing and glazing accessories where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Section 08410: Aluminum Entrances and Storefronts.

1.2 QUALITY ASSURANCE

A. Use Adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, comply with pertinent recommendations contained in:

1. Flat Glass Marketing Association:

a. "Glazing Sealing Systems Manual";

2. U.S. Consumer Product Safety Commission Standards for Architectural Glazing, (42 FR 1428; 16 CFR part 1201).

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product Data: Within 20 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section;

2. Manufacturers' recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 06140.

B. During storage and handling of glass, provide cushions at edges to prevent impact damage.

PART 2 PRODUCTS

2.1 GLASS

A. General:

1. For all glass, provide the type and thickness shown on the Drawings or specified herein.

2. Where type or thickness, or both, are not shown on the Drawings or specified herein, provide type and thickness directed by the Architect.

B. Plate or float glass: Comply with Fed. Spec. DD-G-451, type I, class 1, quality q3.2. Provide 1/4" or 3/16" thickness as called for on the Drawings. Where plate glass is called for, plate glass or float glass may be used.

C. Clear wire glass: Provide type III, 1/4" thick, class 1, kind A, form 1, with square (not diamond) pattern wire mesh.

D. Fully tempered glass:

1. Comply with Fed. Spec. DD-G-1403 and CPSC II.

2. Wherever possible, locate tong marks along an edge which will be concealed in the glazing system.

3. Permit minimum warpage practicable.

4. Provide 1/4" thickness unless otherwise noted.

E. Sliding Glass Window:

1. Location: Reception Area.

2. Glass shall be 1/4" tempered safety glass, with etched finger pulls.

3. Provide and install Knape and Vogt track assembly no. 1092 complete with double channels, rubber guides, nylon rollers, rubber bumpers, shoes and double tracks for sliding glass windows in sizes, and at locations shown by Drawings. Provide in bronze anodized finish. Provide with Knape and Vogt 965 locks.

F. Sealed Insulated Glass Materials: Not Applicable

G. Tape: Pre-shimmed polyisobutylene-butyl tape, Tremco 440 Tape, with built-in continuous spacer of synthetic, rubber or approved equal. Color as selected by the Architect.

H. Glazing Sealant: One-part acrylic, terpolymer, base sealant, meeting Federal Specification TT-S-230A, Tremco Mono-LastoMeric, Uniroyal Acryflex, Dap Acrylic or approved equal. Color as selected by the Architect.

I. Channel Glazing Compound: Oleo-resinous, non-oxidizing, non-hardening, soft consistency, Pecora M251, or approved equal.

J. Setting Blocks and Spacers shall be made of neoprene, with 70 - 90 durometer hardness for setting blocks and 40 - 50 durometer hardness for spacers.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Clean glazing channels, stops, and rabbets to receive the glazing materials, making free from obstructions and deleterious substances which might impair the Work.

1. Remove protective coating which might fail in adhesion or interfere with bond of sealants.

2. Comply with manufacturers' instructions for final wiping of surfaces immediately prior to application of primer and glazing compounds or tapes.

3. Prime surfaces to receive glazing compounds in accordance with manufacturers' recommendations.

3.2 INSTALLATION

A. Inspect each piece of glass immediately prior to start of installation.

1. Do not install items which are improperly sized, have damaged edges, or are scratched, abraded, or damaged in any other manner.

2. Do not remove labels from glass until so directed by the Architect.

3. Install glass so distortion waves, if present, run in the horizontal direction.

B. Exterior Glazing:

1. Apply tape to fixed stops. In setting tape, the horizontal strips at head and sill shall be set first, using full length pieces that will reach the entire width of the opening. Jamb pieces shall then be set in between using full length pieces. Butt tapes together at corners, remove paper backing and daub corners with small amount of sealant to insure a positive seal. Do not lap tape at corners.

2. Place setting blocks. Press glass firmly against tape, taking care to center with equal clearance at all edges between glass and frame.

3. Lay continuous heel bead of sealant along perimeter of glass. Apply sufficient sealant, so that when stops are put in place, the sealant will be forced around the outside perimeter edges of glass.

4. Install removable stops and spacers.

5. Where glass is installed from the outside, completely fill the remaining space between outside face of glass and removable stops with a finish bead of sealant.

6. Where glass is installed from the inside, completely fill the remaining space between inside face of glass and removable stops with a finish bead of channel glazing compound.

C. Interior Glazing:

1. Interior lights in metal doors and frames and interior wood doors shall be glazed with glazing tape. Wrap all edges of glass light with glazing tape and compress tape on installation to 50% of original thickness. Cut projections of tape even with tip of fixed stops and back of glazing bead or channel.

3.3 DEFECTS AND BREAKAGE

A. The glazing Subcontractor shall replace all glass which does not comply with or having defects not permitted by the Federal Specification Grading rules.

B. The glazing Subcontractor shall replace all glass which is broken, cracked or chipped by his own men or due to faulty installation.

C. The Contractor shall replace all glass broken, cracked, or chipped by any other cause so that all glass is in perfect condition at the time of acceptance of the building.

3.4 PROTECTION AND CLEANING

A. The Contractor shall be responsible for the protection of glass after installation.

B. Remove all excess glazing materials, stains, spots, and labels from glass lights. Remove waste materials resulting from work under this Section. All cracked, broken, scratched and imperfect glass shall be replaced.

C. All loose lights shall be removed and reset before acceptance.

D. Final cleaning shall be done by the Contractor under SUPPLEMENTARY GENERAL CONDITIONS.

...END OF SECTION 08800

Warehouse Addition for Paradigm Window Solutions

12/5/03

Portland, ME

Hardware Schedule

Item/function	Manufacturer	Model No.	Finish	Remarks
Lockset No. 1	Sargent	8205 LNL	626	Mortice Lever - Office / Entrance
Closer	Sargent	281 Series	626	
Threshold	Pemko	252X3	Alum	Thermal barrier, ADA compliant - maximum 1/2" height
Hinges	Hager	Full Mortise	26D	Provide ball bearing hinges at all doors.
Floor Stop	Ives	436	Alum	
Wall Stop	Ives	406 1/2	Alum	
Door Bottom Sweep	National Guard	96DkB		
Weatherstripping	National Guard	160V & 5050B		
Over Head Door 1	Over Head Door	591 Series	Match Existing	
Over Head Door 2	Over Head Door	591 Series	Match Existing	
Over Head Door 3	Over Head Door	591 Series	Match Existing	

Notes

Provide masterkey system with construction keying. Consult with Owner for instructions on keying.
Products of one or more manufacturers are listed to establish quality and performance characteristics.
Products of other manufacturers may be accepted subject to review and approval by Architect prior to bid.
Provide wall or floor stops at all swinging doors

Acceptable Manufacturers

Locksets:	Corbin, Russwin, Sargent, Schlage
Closers:	Sargent, Dorma, Norton
Hinges:	Hager, Stanley, Lawrence
Thresholds:	National Guard Products, Pemko, Reese, Zero
Panic sets:	Sargent, Von Duprin
Accessories	Ives, Hiawatha, Rockwood

Warehouse Addition for Paradigm Window Solutions

12/5/03

Portland, ME

Door Schedule

No.	W	H	T	Door Material	Door Type	Frame Type	Lock Function	Hardware	Label	Notes
101	240	144	1-5/8	Overhead Sectional Door	OH1					
102A	36	84	1-3/4	Hollow Metal	F	A	Lockset No. 1	Closer, Threshold, Weatherstripping, Door Bottom Sweep		
102B	102	120	1-5/8	Overhead Sectional Door	OH3					
102C	102	120	1-5/8	Overhead Sectional Door	OH3					
102D	102	120	1-5/8	Overhead Sectional Door	OH3					
102E	102	120	1-5/8	Overhead Sectional Door	OH3					
102F	102	144	1-5/8	Overhead Sectional Door	OH2					
102G	102	144	1-5/8	Overhead Sectional Door	OH2					
102H	102	144	1-5/8	Overhead Sectional Door	OH2					
102I	102	144	1-5/8	Overhead Sectional Door	OH2					
102J	48	84	1-3/4	Hollow Metal	F	B	Lockset No. 1	Closer, Threshold, Weatherstripping, Door Bottom Sweep		
102K	36	84	1-3/4	Hollow Metal	F	A	Lockset No. 1	Closer, Threshold, Weatherstripping, Door Bottom Sweep		
103	36	84	1-3/8	Hollow Metal	F	C	Lockset No. 1	Closer, Threshold, Weatherstripping, Door Bottom Sweep		
104A	36	84	1-3/4	Hollow Metal	F	A	Lockset No. 1	Closer, Threshold, Weatherstripping, Door Bottom Sweep		

Warehouse Addition for Paradigm Window Solutions

12/5/03

Portland, ME

Door Schedule

No.	W	H	T	Door Material	Door Type	Frame Type	Lock Function	Hardware	Label	Notes
104B	192	120		Clear PVC Strip Door/ Containment Curtain						
104C	192	120		Clear PVC Strip Door/ Containment Curtain						

Part II
Division 9

Finishes

SECTION 09260

GYPSUM BOARD SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

A. Gypsum board with joint treatment.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Acoustic insulation.

1.3 SYSTEM DESCRIPTION

A. Acoustic Attenuation for Identified Interior Partitions: 50-54 STC in accordance with ASTM E90.

B. Conform to applicable code for fire rated assemblies and in conjunction with Section 05400, , and as indicated on drawings:

14 SUBMITTALS

A. Product Data: Provide for gypsum board, joint treatment, accessories and metal framing.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840. GA-201 - Gypsum Board for Walls and Ceilings. GA-214 - Recommended Specification: Levels of Gypsum Board Finish. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board. GA-600 - Fire Resistance Design Manual.

PART 2 PRODUCTS

2.1 GYPSUM BOARD SYSTEM

A. Manufacturers:

1. Domtar Gypsum Co.
2. Georgia Pacific Corp.
3. Gold Bond Building Products /Div. National Gypsum Co.
4. United States Gypsum Co.

B. Interior Wall Studs and Tracks: ASTM C645; GA-216 and GA-600; galvanized sheet steel, 25 gage unless otherwise indicated, C shape. Provide (2) 20 ga. studs each side of all door jambs.

C. Interior Wall Studs and Tracks at partitioning 15'-0" and higher above finish floor: Equal to Marino 6SW20. 6x1-5/8, 20GA, Min. Ix of 1.838, Sx of 0.58.

D. Exterior Bearing Wall Studs and Tracks: Equal to Marino 6SW18. 6x1-5/8, 18GA, Min. Ix of 2.353, Sx of 0.78.

E. Exterior Walls: Ref. Structural Drawings.

F. Furring, Framing, and Accessories: 7/8", 20 Gauge furring channels. ASTM C645. GA-216, and GA-600.

G. Gypsum Board Types: 5/8 inch thick, maximum available length in place; ends square cut, tapered edges; unless noted otherwise as follows:

1. Fire Rated Type: ASTM C36 fire resistive, UL rated, 5/8" thick.
2. Moisture Resistant Type: ASTM C630, 5/8" thick.
3. Exterior Gypsum Soffit Board: ASTM C931, 5/8" thick.

2.2 ACCESSORIES

A. Acoustic Insulation: ASTM C665, preformed mineral wool, friction fit type, unfaced, 2.5 inch thick.

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Corner Beads: Metal.

D. Edge Trim: GA-201 and GA-216, Type LC bead.

E. Joint Materials: ASTM C475 GA-201 and GA-216, reinforcing tape, joint compound, adhesive, and water.

F. Fasteners: ASTM C1002 Type S12 hardened screws. GA-216.

G. Adhesive: ASTM C557 and GA-216.

H. Textured Finish Materials: Latex based texturing material containing fine aggregate.

I. Lead discs, lead sheet strips as required for proper closure and seals at joint and fastenings.

PART 3 EXECUTION

3.1 INSTALLATION - METAL STUDS

A. Install studding in accordance with ASTM C754. GA-201, GA-216, GA-600. and manufacturer's instructions.

B. Metal Stud Spacing: As indicated on drawings.

C. Partition Heights: Full height to floor or roof construction above where indicated. Install additional bracing for partitions extending above ceiling.

3.2 INSTALLATION - WALL FURRING

A. Erect wall furring tight to concrete masonry walls; attached in accordance with manufacturer's instructions.

B. Space furring maximum 24 inches oc, not more than 4 inches from floor and ceiling lines.

C. Install insulation between furring attached to concrete masonry walls in accordance with manufacturer's instructions.

D. Install furring as required for fire resistance ratings indicated.

3.3 INSTALLATION - CEILING FRAMING

A. Install in accordance with ASTM C754 GA-216 and manufacturer's instructions.

B. Coordinate location of hangers with other work. Install ceiling framing independent of walls, columns, and above ceiling work.

C. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing.

D. Laterally brace entire suspension system.

3.4 INSTALLATION - ACOUSTIC ACCESSORIES

A. Install resilient channels at maximum 24 inches oc. Locate joints over framing members.

B. Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.

C. Install acoustic sealant within partitions in accordance with manufacturer's instructions.

3.5 INSTALLATION - GYPSUM BOARD

A. Install gypsum board in accordance with GA-201, GA-216, GA-600, and manufacturer's instructions.

B. Fasten gypsum board to furring or framing with screws.

C. Place control joints consistent with lines of building spaces as directed.

D. Place corner beads at external corners as indicated. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

E. Seal cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

3.6 JOINT TREATMENT

A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes, minimum of three coats.

B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

C. Sanding and final coat of fill is not required at concealed surfaces above ceilings and in inaccessible spaces.

3.7 TOLERANCES

A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

...END OF SECTION 09260

SECTION 09510

ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Provide acoustical ceilings where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 20 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section;

2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;

3. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

1.5 EXTRA STOCK

A. Deliver to the Owner for his use in future modifications, an extra stock of 2 unopened boxes of each type of acoustic tile used.

PART 2 PRODUCTS

2.1 SUSPENSION SYSTEM – Provide Fire Rated Assemblies as indicated within Reflected Ceiling Plans

A. Provide a complete system of supporting members, anchors, wall cornices, adapters for light fixtures and grilles, and accessories of every type required for a complete suspended "T" grid system of the arrangements shown on the Drawings, in color or colors selected by the Architect from standard colors of the approved manufacturer, and complying with pertinent requirements of Underwriters Laboratories, Inc., and the governmental agencies having jurisdiction.

B. Acceptable Products:

1. Exposed tee grid 24 inch by 24 inch shall be Donn DX System as manufactured by USG Interiors, Inc., Chicago, IL or Chicago Metallic, or approved equal. Components shall be formed from commercial quality cold-rolled steel, electro-galvanized coated and prepainted. Exposed finish shall be low sheen satin white.

2.2 ACOUSTICAL CEILING PANELS

A. Acceptable products:

1. **ACT:** Non-Fire Rated Assembly. Acoustic panels shall be equal to "#747 Cortega". Square edge panels, 24 inches by 48 inches by 5/8 inch as manufactured by Armstrong Ceiling Systems, or equal.

2. All ceiling materials shall be 100% free of asbestos.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION, GENERAL

A. Except as modified by requirements of governmental agencies having jurisdiction, recommendations of the manufacturer as approved by the Architect, or specific directions of the Architect, install in accordance with ASTM C636 and the pertinent UL design requirements.

B. Lateral Bracing:

1. Provide lateral bracing as required by pertinent codes and regulations.

2. Secure lateral bracing to structural members. Secure at right angles to the direction of the partition and four ways in large ceiling areas.

C. Provide hold-down clips for ceiling boards only when so required by governmental agencies having jurisdiction.

D. Make all grid level within a tolerance of one in 1000 and straight within a tolerance of one in 1000.

E. Install the suspension system in accordance with the layout indicated on drawings. Layout tile from center of areas in both directions, except where otherwise shown on Drawings. Provide proper openings for the installation of electrical fixtures, mechanical items, etc. Any field conditions interfering with the installation of the ceiling shall be called to the attention of the Architect for solution before proceeding with work.

F. Provide approved type inserts and fastenings as required for the suspension system.

G. Suspension system shall be of sufficient strength to support lighting fixtures, supply diffusers, return grilles, and acoustic panels with a maximum deflection of 1/360 of the span. All extra supports shall be provided wherever required to maintain alignment of suspension system due to installation of mechanical and electrical trade components.

H. Units abutting vertical surfaces shall be provided with metal wall molding.

3.3 INSTALLATION OF ACOUSTICAL MATERIALS

A. Suspension System Hangers - Fasten 12 gauge galvanized steel wire hangers to structural framing at not more than 3 feet apart for the length of main runners. Support of each hanger shall be a galvanized eye fitting fastened to structural support. Provide all supports for main tees.

B. Main Runners - Erect main runners 48" o.c. for exposed grid; loop hanger wire through wire support and secure by twisting on drop not less than 3 turns; lower end of hanger wire shall be looped through tab on main runner and secured by twisting on self not less than three turns. Provide extra wire and eye support in center of long dimension on each side of light or mechanical fixture.

C. Cross Tees - Insert cross tees 24" apart and secure to main runners. Cross tees shall not engage main runners at joints.

D. Secure tees to linear diffuser frame with "T-bar" clips.

E. Borders - Install wall molding securely fastened to wall. Parallel borders shall be not less than 6" wide and equal.

F. Acoustical - Install 24" by 48" panels in exposed grid system, with pattern of all panels running parallel to short axis of room.

G. Sound walls: Set acoustical ceiling boards in four continuous beads of 1/4" diameter sealant, one at top of each edge of the gypsum drywall and two on top of the top metal

runner track.

3.4 CLEANING AND FINISHING

A. Following erection and when directed by the Architect, clean all exposed surfaces of dirt, discoloration and all foreign substances. Units which are damaged or improperly installed shall be removed and replaced with whole new units as directed by the Architect, at no additional cost to the Owner.

B. Remove all cartons, containers, rubbish and waste materials from the premises as they accumulate or as required by the Architect.

...END OF SECTION 09510

SECTION 09900

PAINTING

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Paint and finish the interior exposed surfaces listed on the Painting Schedule in Part 3 of this Section, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Priming or priming and finishing of certain surfaces may be specified to be factory-performed or installer-performed under pertinent other sections.

C. The following related items are included under the Sections listed below:

1. Finish Carpentry - Section 06200

2. Gypsum Drywall - Section 09260

3. Wallcovering - Section 09950

4. Factory Finished Mechanical and Electrical Equipment Devices and Fixtures - Divisions 14, 15 & 16.

D. Definitions:

1. "Paint", as used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Regulatory Requirements: Comply with al VOC regulations, local, state and federal codes.

1.3 SUBMITTALS

A. Submit samples of the following materials in accordance with applicable requirements under Section 01340.

1. Colors: Two panels of each type and color used, 8 x 10 inches, on 18 gauge metal where paint is to be applied to metal, on cementitious board where paint is

to be applied to gypsum wallboard and concrete block.

2. Wood Finishes: Two panels of each type used, on same species of solid wood or plywood used on the project, 4 x 8 inches.

B. Colors shall be selected by the Owner from the manufacturer's special custom colors. Painting Sub-Contractor shall prepare samples from the Owner's selection for approval; two (2) record samples of each kind and color, properly identified with formula, manufacturer's name, brand and address, shall be furnished to the Owner.

C. The right is reserved to select, allocate and vary colors on different surfaces throughout the work and to vary the color schemes.

1.4 WORK IN GENERAL

A. Painting and finishing of the following items:

1. All exposed interior items and surfaces through the project.

B. Labels: Do not paint over Underwriter's Laboratories, Factory Mutual or other code required labels, or equipment name, identification, performance rating, or nomenclature plates.

C. Clean, patch, fill, spackle, and putty, sand smooth, where required, all wood, gypsum wallboard, and masonry surfaces to be finished painted.

D. Wash with solvent and wire brush as necessary to remove loose material from all metal to be finished painted.

E. Prime, undercoat, and finish paint all exposed interior masonry, concrete, gypsum wallboard, metal and wood surfaces to be finished painted. Omit primer coat for factory primed items. Gypsum wallboard receiving vinyl wall covering shall be prime painted only.

F. Prime, undercoat and finish paint all exposed exterior ferrous metal surfaces to be finished painted.

G. Protect by drop cloths or other approved method, all finish work exposed to damage by work under this Section, and clean and refinish all surfaces damaged thereby.

H. Provide color samples mixed and applied according to the Architect's instructions; obtain his approval of the samples before starting any finish painting.

I. Prime and back prime all millwork, wood finish, and trim. Back prime woodwork with an approved clear sealer where transparent and stain finishes are scheduled.

J. Field painting of all grilles, louvers, panels, equipment, etc., which are exposed to view in finished areas, and not with factory pre-finish, shall be painted in accordance with this Specification under this Section.

K. Field painting of all piping and ductwork exposed to view and installed under other Sections and not specified to be finished under those Sections shall be painted in accordance with this Specification under this Section.

L. Provide and maintain all necessary interior staging, scaffolding, platforms, and planks up to and including 8'-0" platform height. General Contractor will provide all other interior and

exterior staging and scaffolding.

M. Scaffolding shall be in conformity with all applicable codes, rules, regulations and ordinances and shall be maintained in such a manner as not to interfere with work of other trades.

1.5 WORK NOT INCLUDED

A. The following items shall not be painted:

1. Exterior items and surfaces except as otherwise specified.

2. Exposed items and surfaces noted or specified or scheduled to receive another finish or prefinish.

3. Pipes, pipe coverings, and ductwork above ceilings and otherwise concealed.

1.6 COMPATIBILITY - SHOP AND FIELD PAINTS

A. For a satisfactory painting and finishing job, the paints applied in the shop and in the field shall be mutually compatible. It shall be the responsibility of the Painting Sub-Contractor to determine the compatibility of the paint. Failure to notify the Architect of unacceptable conditions shall be construed as acceptance of the paints specified; and the cost of corrective measures shall be at the Painter's expense.

1.7 COORDINATION

A. The Sub-Contractor for work of this Section shall coordinate his work with that of other trades affecting, or affected by his work, cooperating as necessary with other trades to assure the steady progress of all work under the Contract.

1.8 GENERAL REQUIREMENTS

A. When Work occurs in an Operational Clinic: All painting operations shall be performed outside of patient treatment hours as established by the facility Administrator. The Contractor shall be responsible to request the hours of operation at the time of bidding. Any additional costs for premium time shall be included within the Base Bid for the Work. No additional cost to the Owner shall be accepted.

B. Colors: Shall be in accordance with schedule provided by the Architect, the tinting and matching shall be as approved by the Architect. The Contractor shall provide all facilities for comparison and adjustment of colors. Colors will be selected using the color systems of the paint manufacturer listed. Colors will be selected using not more than ten colors plus black, white and aluminum.

C. Samples: Before delivering materials to site, submit samples as specified above. Apply the total number of coats required leaving an equal amount of each coat exposed, coats shall be of different shades. Label each sample board with color code and manufacturer's name and paint classification. All materials and colors shall be approved before commencing work, and any work started prior to such approval is done at the Contractor's risk.

D. Successive coats of paint shall differ sufficiently in shade so as to be readily distinguishable.

E. Approved samples shall be retained at the site for comparison with final colors. Any surface not consistent with the sample shall be repainted.

1.9 STORAGE

A. A place with ventilation to the outside will be designated for storage of paint materials and tools. All paints, painter's materials, and tools, and all mixing, cleaning, and other operations of the same nature shall be confined to this space. The location of this space will be designated after the work of the entire contract has been scheduled and whenever it may be necessary to change the location of this storage space, the Painting Sub-Contractor shall promptly move to the newly designated space.

1. The floor of such space shall be covered with 10 mil polyethylene with no joints and be protected with plywood walking surface.

2. The storage area shall be adequately protected from damage. Paints shall be covered at all times and proper safeguards taken to prevent fire. All paints and oil soaked rags shall be placed in a metal container with a tightly covered lid, and shall be disposed of off the site at the end of each work day. A hand-operated carbon dioxide fire extinguisher not less than five pounds capacity shall be kept immediately available at all times during mixing, pouring, cleaning, storage, etc., operations in this area.

3. The storage area shall be kept locked at all times when not in use, and at the completion of each day's work. The Contractor shall be given a set of duplicate keys.

1.10 MECHANICAL AND ELECTRICAL PAINTING BY GENERAL CONTRACTOR

A. Wherever sufficient access for field painting exists, the specified types of undercoats and finish coats shall be applied to the mechanical and electrical installations, except work above finished ceiling and work in Mechanical Equipment Rooms.

B. In areas where access is difficult, a total of two coats of paint for mechanical and electrical installations will be considered ample. In such conditions, as much as possible of the first coat shall be the specified type of surface treatment and priming, but the second coat may be a sprayed on coat to cover as much as possible of the work and provide a full coverage of paint to all parts in view. In such areas, the color will be the common for all work in close proximity, such as ducts, hangers, ceilings, etc., in a tightly grouped complex suspended from overhead structure.

C. Piping shall be painted in color-code system, USASI A13.1-1956, or as specified under mechanical or electrical sections.

D. Give particular attention to galvanized surfaces for best assurance of adhesion of primer.

E. Before starting painting of mechanical and electrical work, review each area involved with the mechanical and electrical trades and take their direction for protection of items not requiring paint. Either mask such work, or if masking cannot be used due to operation or necessary motion of items, paint up to them in a neat and careful manner, avoiding paint spatter onto them. Protect retardant painted steel and decking.

F. After applying first coat to the mechanical and/or electrical work within given space, consult the mechanical and electrical trades and have them inspect the painting work, making recommendations, if necessary for proper paint coverage of this work. As a general limitation, it is not intended that any field painting be done to parts of the work

wholly inaccessible, such as tops of ducts and pipes adjacent to ceilings and immediately next to walls; however, certain parts needing paint as a protection against corrosion or removal of applied paint where paint should not occur shall be painted, or paint removed, according to instructions of Architect.

G. In instances that the mechanical and electrical trades make recommendations after the first coat application, request their inspection of the corrective work, after second is applied.

PART 2 PRODUCTS

2.1 MATERIALS

A. Quality Standards: All paint and painting materials used in the work of this Section shall, unless otherwise specified, be the products of Benjamin Moore. Pratt and Lambert, Pittsburgh Paint Co., Devoe & Raynold Co., or Glidden-Durkee may be substituted only when approved by the Owner.

1. Painting and finishing materials specified under "Painting Schedule" are products of Benjamin Moore and Company, except as specifically noted, and are intended to establish the quality and types of materials required. All materials shall be factory prepared of the highest quality produced by the manufacturer. All painting materials such as linseed oil, shellac, turpentine, etc., shall be pure and not dilute. All mineral spirits shall be odorless type.

B. Material Suitability: No claim as to unsuitability or unavailability of any material specified or unwillingness to use same, or inability to produce first-class work with the materials will be entertained, unless such claims are made in writing and submitted with the bid.

C. Application: Only materials made by same manufacturer shall be used for all coats of any particular surface.

D. Mixing: All paint colors shall be mixed at the factory or in the plant of a recognized representative of the manufacturer. All paint shall be delivered ready for application. No material shall be changed, thinned, or tinted in any way except as indicated by specific printed instructions of the manufacturer, and the written approval of the Architect.

PART 3 EXECUTION

3.1 PREPARATION

A. No paint shall be applied to any surface not in perfect condition to receive it, and the Contractor shall be held responsible for the smoothness of his work. All surfaces shall be clean and dry before painting. Sand all surfaces requiring it with fine sandpaper.

B. Masonry walls shall be thoroughly cleaned and free from all discolorations, streaks, etc., and thoroughly dry before painting begins. Interior masonry walls to be painted shall be prime coated with Benjamin Moore's fill-coat block filler. Exterior walls to be painted shall be prime coated with Moore's Waterproof Masonry Paint.

C. Galvanized metal shall be washed with acetic acid or 8 ounces of copper acetate or copper sulfate to one gallon of warm water allowed to dry on surface. Unprimed metal shall have dirt and grease removed with benzene. Remove solvent, sandpaper, and wire

brush if necessary, for primed metal surfaces.

D. Wood shall have knots, sap or pitch places covered with Benjamin Moore's QD-30, #202. Putty all nail holes, cracks, open joints, and other defects. Putty under natural finish work shall be colored to match wood.

E. Putty and spackle all small cracks and defects, and prepare all surfaces for properly applied painting finish.

F. Shop primed metals-After cleaning, abraded spots shall be sanded and touched-up with original priming material.

G. Concrete floors to be painted shall first be washed with detergent or trisodium phosphate solution, rinsed thoroughly with clean water and allowed to dry. Where necessary, floors should be cleaned carefully with appropriate solvents to remove all traces of grease, oil or wax. Concrete surfaces must be at least 60 days old. Cement spatters should be removed; holes and crevices to be filled with mortar. Surface to be swept free of dirt, dust and debris. Smooth, hard-troweled concrete floors shall be etched with a 10% solution of muriatic acid. Provide good ventilation when using acid, and take necessary precautions in handling acid.

3.2 PAINT APPLICATION

A. Before starting work, all surfaces to be painted shall be inspected and all defects reported to the Architect. The Contractor shall correct defects when directed by the Architect. The commencing of the work done by the Painter indicates his acceptance of the surfaces. When there is a question of a dryness of surfaces, the Contractor shall test them with a modern dampness indicating machine in the presence of the Architect.

B. No paint shall be applied at temperatures below 50 degrees F., and rising, and not more than 90 degrees F. except as permitted by the Architect, nor upon wet surfaces, neither shall paint be put on under conditions which would leave finished work unsatisfactory. No painter's finish shall be applied until the preceding coat is thoroughly dried, 48 hours for interior paints, unless more time is required by the manufacturer. All interior wood and metal surfaces shall be properly block-sanded or steel-woolled between coats.

C. The Painter shall protect his work at all times during the progress of painting and until completion. All adjacent work and materials shall be protected by suitable drop cloths or adequate masking materials. Upon completion, all paint spots shall be removed. Any damage shall be repaired and work left in condition satisfactory to the Architect.

D. No plumbing fixtures or pipes whatsoever shall be used for the mixing or for the disposal of any refuse material. The Painter shall carry water required to his mixing rooms, and shall dump waste material outside the building in a provided refuse receptacle. He will be held strictly responsible by the Architect for any and all damage resulting from failure to observe these provisions.

E. All surfaces not acceptable to the Architect shall be refinished with such corrective action as required, including additional coats of paint until entire area is completed with a first class appearance. Such corrective work shall be done at no cost to the Owner.

F. All hardware plates, switch plates, receptacle plates, and lighting canopies shall be removed before doing any painting and replaced when painting is completed.

G. Finish Work: Each painted surface shall be uniform in gloss, finish, color, and shall be free from laps, brush marks, runs, blisters, cracks and other defects. Any surfaces which

do not conform with the foregoing requirements, in the opinion of the Architect, shall be repainted at no additional expense to the Owner, and to meet the approval of the Architect.

3.3 PAINTING SCHEDULE

A. Colors:

1. Color-Schedule: Owner will provide complete color schedule after award of the Contract. All colors will be as selected by Owner.

2. Walls: Not more than two colors in any one room or space will be selected by Architect.

3. Doors & Frames: Doors and frames may or may not be painted in the same color, and may be a different color than the walls. The opposite sides of doors and frames may be different colors. Door edges shall be painted to match push side or door.

B. Schedule:

1. Paint Type P-1 Base Latex
Interior Gypsum Wallboard:
1st Coat – ICI Ultra Hide PVA Primer Sealer 1030
2nd Coat – ICI Ultra Hide Eggshell Latex Enamel 1412 xxxx
3rd Coat - Same as 2nd Coat

2. Paint Type P-2 Acrylic Base
Masonry
1st Coat – ICI Ultra Hide Interior / Exterior Vinyl-Acrylic Block Filler 3010-1200
2nd Coat – ICI Dulux Interior/Exterior Acrylic Gloss Finish
3rd Coat - Same as 2nd Coat

3. Paint Type P-3 Acrylic Base
Metal:
1st Coat – ICI Lifemaster Pro Primer
2nd Coat – ICI Lifemaster Pro Hi Perfomance Acrylic Coating 6900 series
3rd Coat - Same as 2nd Coat

4. Paint Type P-6 Stain/Polyurethane
Interior Stained Wood Finish:
1st Coat – Woodpride Urethane Satin 1908 reduced 25%
2nd Coat – Woodpride Urethane Satin 1902
3rd Coat – Same as second coat

...END OF SECTION 09900

Warehouse Addition for Paradigm Window Solutions

12/5/03

Portland, ME

Room Finish Schedule

No.	Room Name	Flooring	Base	Walls	Trim	Ceiling	Remarks
101	Open Racking	Sealed Concrete & Traffic coatings		Steel Liner Panel			Extend Interior Liner Panels to approximately 12'-0" aff - Coordinate with girt lines.
102	Shipping/Receiving	Sealed Concrete & Traffic coatings		Steel Liner Panel			Extend Interior Liner Panels to approximately 12'-0" aff - Coordinate with girt lines.
103	Shipping Office	Sealed Concrete & Traffic coatings	Vinyl Cove	Eggshell Paint	Satin Finish Clear Urethane	ACT	Extend Interior Liner Panels to approximately 12'-0" aff - Coordinate with girt lines. Provide continuous interior liner panel above shipping office to upper most girt line.
104	Bay/Bow Dept.	Sealed Concrete & Traffic coatings		Steel Liner Panel			Extend Interior Liner Panels to approximately 12'-0" aff - Coordinate with girt lines.

Part II
Division 10

Specialties

SECTION 10521

PORTABLE FIRE EXTINGUISHERS

PART 1 GENERAL

1.1 DESCRIPTION

A. Work included: Provide hand-portable fire extinguishers where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 20 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section;

2. Manufacturer's specifications, catalog cuts, and other data needed to prove compliance with the specified requirements;

3. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

PART 2 PRODUCTS

2.1 FIRE EXTINGUISHERS

A. Fire extinguishers at all locations shown on the plans shall be "Cosmic 6E" series, 6 lb. capacity with pressure indicating gauge as manufactured by JL Industries, Minneapolis, Minnesota or approved equal.

B. Wall bracket, where required shall be a "Mark Bracket MB808for Cosmic 6E". Extinguishers shall be fire class A, B, C; U.L. Rating 3A-40BC, multi-purpose dry chemical type.

C. Semi-recessed cabinet shall be equal to JL Industries Ambassador 1012F10 with ADAC and FE red lettering options. Size as required to accommodate specified extinguisher. Provide fire rated cabinets at all locations within fire rated wall assemblies.

D. Service, charge, tag, and obtain Local Fire Department Certification for each fire extinguisher not more than five calendar days prior to the Date of Substantial Completion of the Work as that Date is established by the Architect. All fire extinguishers shall meet the requirements of NFPA Manual No. 10, latest edition.

PART 3EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturers' recommendations as approved by the Architect, anchoring all components firmly into position for long life under hard use.

B. Installation height shall be such that the centerline of cabinet or extinguisher is 48" above finish floor.

...END OF SECTION 10521

Part II
Division 11

Equipment

SECTION 11161

DOCK LEVELERS
(aFX™ Dock Leveler)

PART 1 GENERAL

1.1 WORK INCLUDED

A. Factory assembled dockleveler to include all necessary controls.

B. Curb angles with anchors for casting into concrete.

C. Installation and Owner's Manual.

1.2 RELATED WORK

A. Section 11160 - Trailer Restraints.

B. Section 11164 - Seals and Shelters.

C. Section 11165 - Dock Bumpers.

1.3 REFERENCES

A. ANSI MH 14.1 1987 "Loading Docklevelers and Dock Boards."

1.4 SYSTEM DESCRIPTION

A. Lug style hinged lip; air powered recessed dockleveler to the following requirements:

1. NOMINAL SIZE: 6'-0" feet wide and 7'-0" feet long.

2. CAPACITY: 40,000 lbs. (Letter Rating not acceptable under ANSI MH 14.1 1987 standard.)

3. SERVICE RANGE: 8 inches above dock level and 8 inches below dock level.

4. Dockleveler lip to extend a minimum of 12 full inches beyond outside face of dock bumpers for maximum available service to most standard trailers with 16" Lip.

1.5 SUBMITTALS

A. Manufacturer's Installation Instructions.

B. Submit pit prints showing pit dimensions, wiring diagrams, and roughing-in dimension as well as any conduit runs if necessary.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Model aFX™ as manufactured by Kelley, a SPX company - Milwaukee, WI.

2.2 EQUIPMENT

A. CURB ANGLES: Eight pieces, 3x3x3/16", to cover all exposed edges of pit and forward dock edge as required for bumper mounting.

B. LEVELER:

1. RAMP: Reinforced with twist resistant lamda style cold-roll beams. Torsionally compliant ramp construction to be three sided without header plate. Four hinge pins at rear of ramp assembly. Lug hinges welded directly to deck and beam front with a minimum of 15 1/2" of weld. Open lug style lip hinge construction. Lip hinge to allow swept debris to fall to ground between lip and hinge pin and deck and hinge pin. To include structural full operating range toe guards with Safety Yellow markings as required by OSHA as per ANSI - Z535.

2. LIP: Hinge pin lugs to be welded a minimum of 3" from rear edge of lip towards front edge, or provide 4" of lip support under lip from rear edge. Lip hinge welds to run parallel to deck reinforcement beams for added strength.

3. SUB FRAME: 19" deep to facilitate 20", sloped and 24" deep pit configurations. Rear portion equipped with four upright members that form ramp rear hinges. Side of formed longitudinal angle members to connect with rear portion of subframe and front dock leveler support leg and ramp pads.

4. DOCK LEVEL SUPPORT: Two structural formed dock level support legs at forward end of ramp to be designed to rest on subframe ramp support pads for increased positioning accuracy. 60,000 lb. structural dock level support legs - drop tested to the full rated capacity of the leveler - provide free fall protection.

5. LIFTING SYSTEM: Ramp powered by low-pressure system, driven by a two-stage 10 amp fan motor which directs air into bag subassembly and lifts ramp and lip assembly. System to be activated by push-button and include automatic lip extension. Dockleveler to include airDefense support leg system to virtually eliminate "stump out" and provide free fall protection in the event of trailer premature departure.

6. ENVIRONMENT: Lifting system to be free from hydraulic fluids.

7. WARRANTIES: **Lifting system** to be warranted for five years parts and labor, and include all fittings, seals, motor, and air bag. All lifting system components to be free from defects in material and workmanship for a period of five years from date of installation. **Lip hinge** to carry a lifetime structural parts and labor warranty. Dockleveler structure (deck section, subframe, lip section, rear hinge, front hinge) carry a 10 year structural parts and labor warranty.

8. LIP LIFTING SYSTEM: Gravity Lip™ automatic lip extension system to automatically extend lip. Lip extension to allow for leading edge of lip to clear a point 12" inches above dock and 4" away from dock face wall.

9. MOTOR AND CONTROLS: Air powered lifting system powered by 10 amp, two-stage, 115v, 1 phase fan motor. Housing to be easy access with re-usable and self-cleaning air filter. Controls to be shielded NEMA 4 push-button operation.

10. NIGHT LOCKS: Night locks to be attached to ramp support pads on subframe and not dependent on lip support to reduce stress on lip hinge assembly.

11. FINISH: Structural ramp and subframe sections of unit to be shot cleaned and painted with rust-inhibiting paint.

PART 3 EXECUTION

3.1 PREPARATION

A. Provide curb angle for building into work (optional).

B. Pit Design:

1. 20" pit depth for new construction to reduce forming.

2. 20" to 24" sloped pit depth for food and food service applications to facilitate easy pit clean out of debris and water.

3.2 INSTALLATION

A. Install in flat or sloped prepared pit in accordance with manufacturers installation instructions.

B. Set square and level; anchor securely flush to dock floor; shim where applicable to keep flush; weld back and front of subframe to curb angles.

C. Adjust installed unit for operation as specified by manufacturer.

... END OF SECTION 11161

SECTION 11164

DOCK SHELTER
(TS 1000™ SERIES Dock Shelter)

PART 1 GENERAL

1.1 WORK INCLUDED

A. Factory assembled unit with necessary mounting hardware.

B. Installation and Owners Manual

1.2 RELATED WORK

A. Section 11161 - Dock levelers.

B. Section 11160 - Trailer Restraints.

C. Section 11165 - Dock Bumpers.

1.3 REFERENCES

A. Government Test Method Standard No.191A for fabric.

1.4 DESCRIPTION (APPLICATION)

A. Door Size - Unit shall accommodate an opening size of 8'-6" wide x 10'-0" high doors.

B. Dock Height - Loading dock height shall be 48" above finish grade.

C. Shelter Projection - Total dock shelter protection excluding any building wall offset or building wall overhang shall be 18".

D. Service Range - Unit shall be designed to service vehicles ranging in height from ___'-___" to ___'-___".

1.5 SUBMITTALS

A. Manufacturers Installation Instructions.

B. Submit dimensional drawing.

C. Submit specification sheet.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS AND MODEL

A. Model TS-1000 as manufactured by Kelley Tufseal, Muskego, WI.

2.2 EQUIPMENT

A. COMPONENTS: Each unit shall consist of (2) two side frames, side curtains, draft pads, steel supports and (1) one head frame and head curtain.

B. FRAMING: To be constructed of roll-formed galvanized steel and covered with white translucent fiberglass, securely fastened to the outside of the framing.

C. CURTAINS: Side curtains will include flexible fiberglass stays, spaced 14" on center. All stays will be inserted into sleeves and then inserted into stay pockets. Side curtains will also include bottom wear panels. The inside of both side curtains will include a closed cell neoprene sealing edge. Head curtains will include (4) wear pleats at each end and (5) flexible fiberglass stays inserted into sleeves and stay pockets.

D. PROJECTION: Overall unit projection shall be a minimum of 14" beyond the face of the dock bumpers.

E. FABRIC: The unit base fabric shall be manufacturer's standard. The second layer of fabric for the (4) four wear pleats and (2) two bottom wear panels shall also be manufacturer's standard.

F. UNIT CONSTUCTION: The unit shall also include full length yellow guide stripes.

G. WARRANTY: Unit shall include the manufacturers standard (5) year frame warranty and a (1) one year warranty against defects in materials and workmanship on the remaining components.

H. OPTIONS: none

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Caulk between the building wall and unit.

...END OF SECTION 11164

Part II
Division 12

Furnishings
(Not Applicable)

Part II
Division 13

Special Construction
(Not Applicable)

Part II
Division 14

Conveying Equipment
(Not Applicable)

Part II
Division 15

Mechanical

Reference Drawings

Part II
Division 16

Electrical

Reference Drawings