

City of Portland, Maine - Building or Use Permit Application

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

PERMIT ISSUED		CBL:
Permit No: 02-0033	Issue Date: FEB 12 2002	070 A005001

Location of Construction: 54 St John St	Owner Name: St John Street Associates	Owner Address: Po Box 4821	Phone:
Business Name: n/a	Contractor Name: Allied/Cook Construction Corp.	Contractor Address: PO Box 1396 Portland	Phone: 2077722888
Lessee/Buyer's Name: n/a	Phone: n/a	Permit Type: Alterations - Commercial	Zone: IMB

Past Use: Commercial / Food Processing	Proposed Use: Commercial / Food Processing; Lunchroom fit-up existing space and entrance corridor addition.	Permit Fee: \$1,038.00	Cost of Work: \$144,143.00	CEO District: 3
		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied	INSPECTION: Use Group: BOCA 99 Type: 2	

Proposed Project Description: Tenant fit-Up and Corridor Addition	Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>
PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)		
Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied		
Signature:	Date:	

Permit Taken By: gg	Date Applied For: 01/10/2002	Zoning Approval
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<ol style="list-style-type: none"> This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules. Building permits do not include plumbing, septic or electrical work. 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.. 	Special Zone or Reviews <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan <i>needs</i> Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/> Date: <i>[Signature]</i> 1/10/02	Zoning Appeal <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied Date:	Historic Preservation <input checked="" type="checkbox"/> Not in District or Landmark <input type="checkbox"/> Does Not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied Date: <i>[Signature]</i>
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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

THIS IS NOT A PERMIT/CONSTRUCTION CANNOT CO. PROCEED UNTIL THE PERMIT IS ISSUED

090033

**Building or Use Permit Pre-Application
Attached Single Family Dwellings/Two-Family Dwelling
Multi-Family or Commercial Structures and Additions Thereto**

In the interest of processing your application in the quickest possible manner, please complete the Information below for a Building or Use Permit.

NOTEIf you or the property owner owes real estate or personal property taxes or user charges on ANY PROPERTY within the City, payment arrangements must be made before permits of any kind are accepted.**

Location/Address of Construction (include Portion of Building): 54-70 St. John Street		
Total Square Footage of Proposed Structure 50,000 297	Square Footage of Lot Existing	
Tax Assessor's Chart, Block & Lot Number Chart# 70 Block# A Lot# 5	Owner: Barber Foods	Telephone#:
Owner's Address: 54-70 St John Street Portland, ME	Lessee/Buyer's Name (If Applicable) N/A	Cost Of Work: \$ 7,200,000 Fee \$7,224 144,143 1,032
Proposed Project Description: (Please be as specific as possible) Food Processing Plant addition LUNCH ROOM FIT-UP OF EXISTING SPACE AND SEE PLANS SEE PLANS ADD ENTRANCE CORRIDOR ADDITION		
Contractor's Name, Address & Telephone Allied/Cook Construction Corp. P.O. Box 1396, Portland, ME 04104 (207) 772-2888		Rec'd By
Current Use: Food Processing	Proposed Use: Food Processing	

Separate permits are required for Internal & External Plumbing, HVAC and Electrical installation.

- All construction must be conducted in compliance with the 1996 B.O.C.A. Building Code as amended by Section 6-Art II.
- All plumbing must be conducted in compliance with the State of Maine Plumbing Code.
- All Electrical Installation must comply with the 1996 National Electrical Code as amended by Section 6-Art III.
- HVAC (Heating, Ventilation and Air Conditioning) installation must comply with the 1993 BOCA Mechanical Code.

You must include the following with you application:

- 1) A Copy of Your Deed or Purchase and Sale Agreement
- 2) A Copy of your Construction Contract, if available
- 3) A Plot Plan/Site Plan

Minor or Major site plan review will be required for the above proposed projects. The attached checklist outlines the minimum standards for a site plan.

4) Building Plans

Unless exempted by State Law, construction documents must be designed by a registered design professional.

A complete set of construction drawings showing all of the following elements of construction:

- Cross Sections w/Framing details (including porches, decks w/ railings, and accessory structures)
- Floor Plans & Elevations
- Window and door schedules
- Foundation plans with required drainage and dampproofing
- Electrical and plumbing layout. Mechanical drawings for any specialized equipment such as furnaces, chimneys, gas equipment, HVAC equipment (air handling) or other types of work that may require special review must be included.

Certification

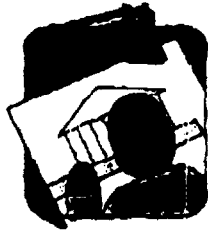
I hereby certify that I am the Owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, 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: <i>Paul Saliberto V.P. Pres Man</i>	Date: <i>3/15/01</i> <i>1/10/2002</i>
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Building Permit Fee: \$30.00 for the 1st \$1000. cost plus \$6.00 per \$1,000.00 construction cost thereafter.

Additional Site review and related fees are attached on a separate addendum

** Site plan exemption Applied for need 11 x 17*



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: JOHN A. SPEAR
130 BANK ST.
LANDISVILLE, PA 17538

DATE: 02/08/02

Job Name: BARBER FOODS LUNCHEON BUILDOUT & ENTRY ADDITION

Address of Construction: 54 ST. JOHN ST.

THE BOCA NATIONAL BUILDING CODE/1999 Fourteenth EDITION

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

ENTRY ONLY.
LUNCHEON
16 BUILD-
OUT OF
EXISTING
BUILDING

Building Code and Year 1999 Use Group Classification(s) N/A
Type of Construction NON-COMBUST. Bldg. Height 14' Bldg. Sq. Footage 260
Seismic Zone 1 Group Class B
Roof Snow Load Per Sq. Ft. 50 Dead Load Per Sq. Ft. 10
Basic Wind Speed (mph) 110 Effective Velocity Pressure Per Sq. Ft. 30 PSF
Floor Live Load Per Sq. Ft. N/A

Structure has full sprinkler system? Yes No Alarm System? Yes 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

If mixed use, what subsection of 313 is being considered N/A

List Occupant loading for each room or space designed into this Project. ZERO (ENTRY)

PSH 6/97/2K

(Designers Seal)



City of Portland, Maine

389 Congress St., Rm 315
Portland, ME 04101

ACCESSIBILITY CERTIFICATE

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

FROM: JOHN A. SPEAR

RE: Certificate of Design, HANDICAP ACCESSIBILITY

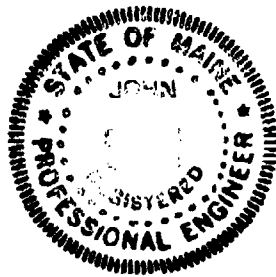
DATE: 02/08/02

These plans and/or specifications covering construction work on:

BARBER FOODS LUNCHROOM BUILDOUT AND
ENTRY ADDITION

Have been designed and drawn up by the undersigned, a Maine registered engineer/architect according to State Regulations as adopted by the State of Maine on Handicapped Accessibility.

(SEAL)



Signature

[Handwritten Signature]

Title

ENGINEER

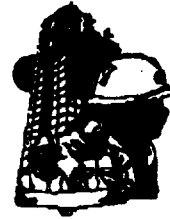
Firm

SPEAR & ASSOCIATES

Address

130 BANK ST.
LANEYSVILLE, PA. 17538

Post-It® Fax Note	7671	Date	02/08/02	# of Pages	3
To	DAVE CADDALL	From	JOHN SPEAR		
Co./Dept		Co.			
Phone #		Phone #			
Fax #	(207)874-8716	Fax #			



**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: JOHN A. SPEAR

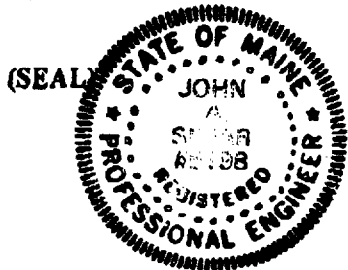
RE: Certificate of Design

DATE: 02/08/02

These plans and/or specifications covering construction work on:

BARBER FOODS LUNCHROOM BUILDOUT AND
ENTRY ADDITION.

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.



Signature [Handwritten Signature]
Title ENGINEER
Firm SPEAR & ASSOCIATES
Address 130 BANK ST.
LANDISVILLE, PA. 17538

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.

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 to schedule your inspections as agreed upon

Permits expire in 6 months, if the project is not started or ceases for 6 months.

The Owner or their designee is required to notify the inspections office for the following inspections and provide adequate notice. Notice must be called in 48-72 hours in advance in order to schedule an inspection:

By initializing at each inspection time, you are agreeing that you understand the inspection procedure and additional fees from a "Stop Work Order" and "Stop Work Order Release" will be incurred if the procedure is not followed as stated below.

_____ **Pre-construction Meeting:** Must be scheduled with your inspection team upon receipt of this permit. Jay Reynolds, Development Review Coordinator at 874-8632 must also be contacted at this time, before any site work begins on any project other than single family additions or alterations.

_____ **Footing/Building Location Inspection:** Prior to pouring concrete

_____ **Re-Bar Schedule Inspection:** Prior to pouring concrete

_____ **Foundation Inspection:** Prior to placing ANY backfill

_____ **Framing/Rough Plumbing/Electrical:** Prior to any insulating or drywalling

_____ **Final/Certificate of Occupancy:** Prior to any occupancy of the structure or use. NOTE: There is a \$75.00 fee per inspection at this point.

Certificate of Occupancy is not required for certain projects. Your inspector can advise you if your project requires a Certificate of Occupancy. All projects DO require a final inspection

_____ **If any of the inspections do not occur, the project cannot go on to the next phase, REGARDLESS OF THE NOTICE OR CIRCUMSTANCES.**

_____ **CERIFICATE OF OCCUPANICES MUST BE ISSUED AND PAID FOR, BEFORE THE SPACE MAY BE OCCUPIED**

[Signature] JP A005
Signature of applicant/designee

2/4/02
Date

[Signature]
Signature of Inspections Official

2-12-02
Date

CBL C70 A005 Building Permit #: 090033

APPLICATION FOR EXEMPTION FROM SITE PLAN REVIEW

ALLIED COOK CONSTRUCTION

Applicant
PO BOX 1396 PORTLAND ME 04104

Applicant's Mailing Address
PAUL LALIBERTE 772-2888

Consultant/Agent/Phone Number

1/10/02

Application Date

LUNCH ROOM FIT-UP

Project Name/Description

54 ST JOHN ST

Address of Proposed Site

Description of Proposed Development:

BARBER FOODS LUNCH ROOM FIT-UP IN
EXISTING SPACE WITH A 297 SF CORRIDOR
ADDITION

CBL: 070-A 005

Please Attach Sketch/Plan of Proposal/Development

Criteria for Exemptions:

See Section 14-523 (4)

a) Within Existing Structures; No New Buildings, Demolitions or Additions

b) Footprint Increase Less Than 500 Sq. Ft.

c) No New Curb Cuts, Driveways, Parking Areas

d) Curbs and Sidewalks in Sound Condition/ Comply with ADA

e) No Additional Parking / No Traffic Increase

f) No Stormwater Problems

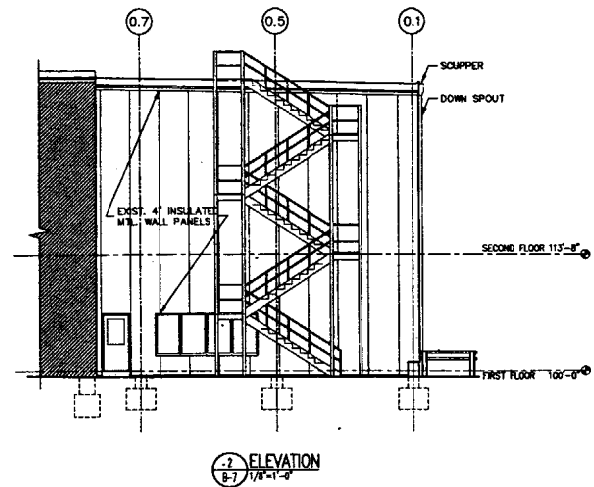
g) Sufficient Property Screening

h) Adequate Utilities

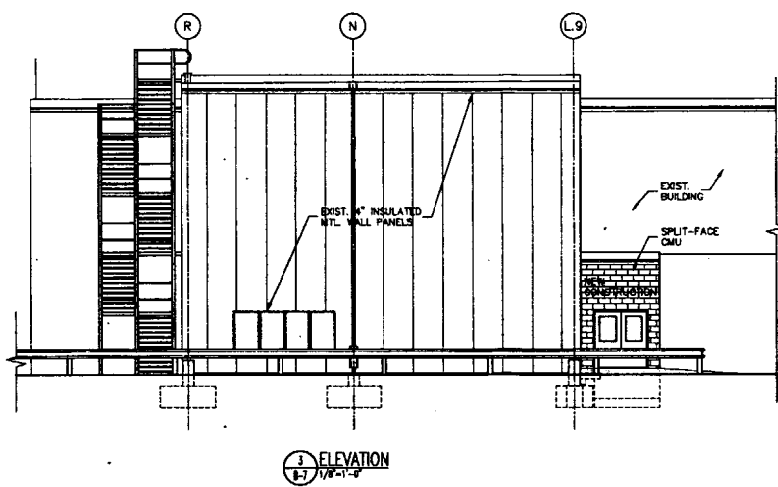
Applicant's Assessment (Yes, No, N/A)
<u>NO</u> <u>297 SF ADDITION</u>
<u>YES</u>
<u>NO</u>
<u>NO</u>
<u>NO</u>
<u>NO</u>
<u>YES</u>
<u>YES</u>

Planning Office Use Only

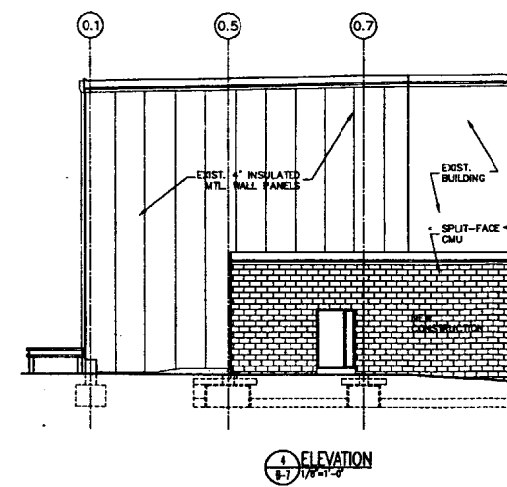
Planning Office Use Only:
Exemption Granted _____



2 ELEVATION
B-7 1/8-1-0



3 ELEVATION
B-7 1/8-1-0



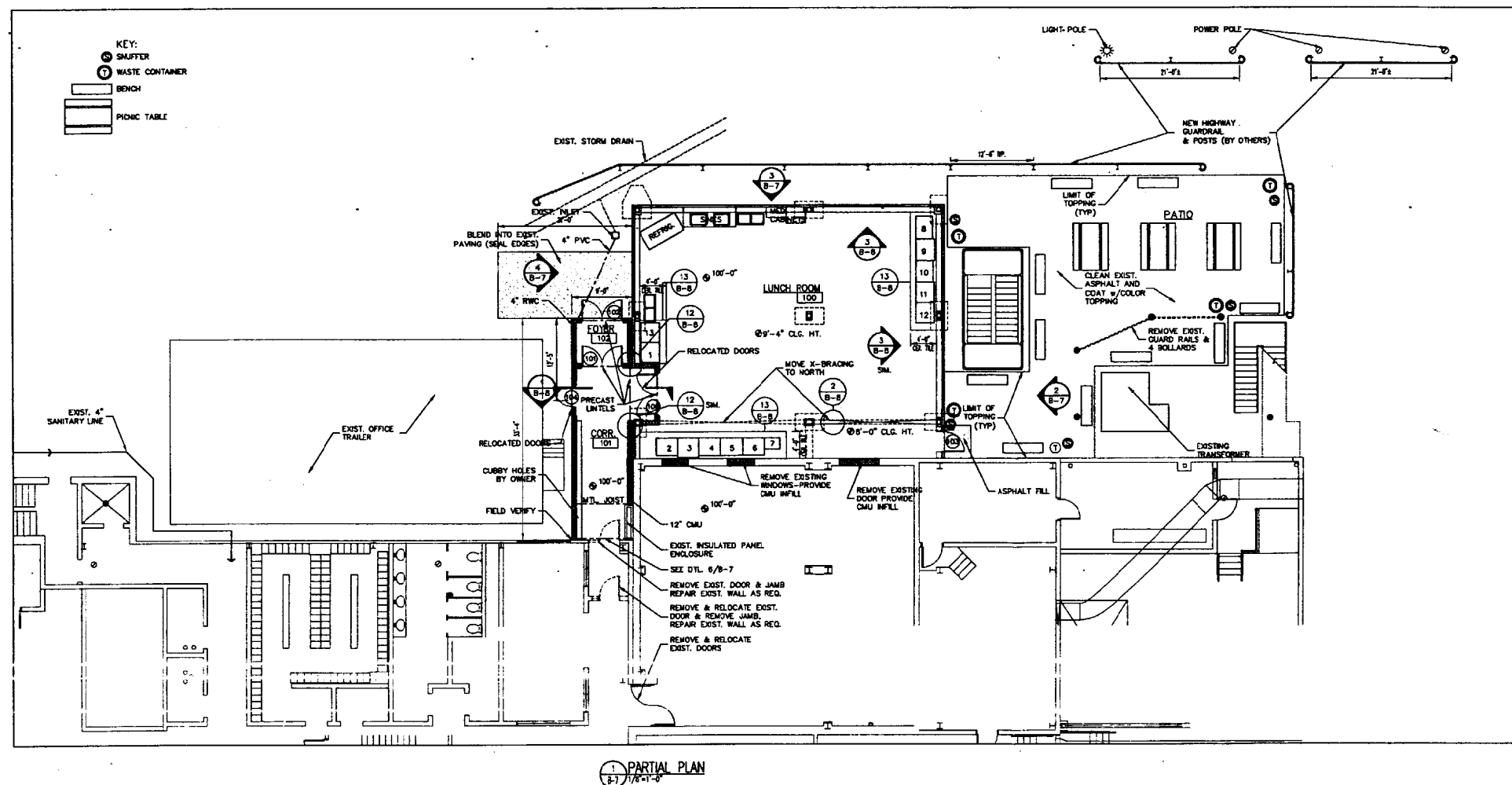
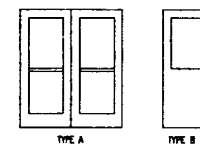
4 ELEVATION
B-7 1/8-1-0

ROOM FINISH SCHEDULE										
ROOM NO.	ROOM NAME	FLOOR TYPE	BASE TYPE	WALLS				CEILING		REMARKS
				NORTH	EAST	SOUTH	WEST	HEIGHT	TYPE	
100	LUNCH ROOM	F1/F2	B1	EXIST	EXIST/PNT	EXIST/PNT	EXIST	8'4"/8'6"	C1	
101	CORRIDOR	F2	B1	PNT	PNT	PNT	PNT	8'4"	C1	
102	FOYER	F2	B1	PNT	PNT	PNT	PNT	8'4"	C1	

ROOM FINISH SCHEDULE

- F1 VCT
- F2 VCT SLIP RESISTANT
- C1 CERAMIC TILE
- B1 WHITE COVE
- C1 ADDITIONAL TILE

DOOR SCHEDULE													
NO.	DOOR	DOOR			JAMB			HEAD			REMARKS		
		MATERIAL	TYPE	GLASS	MATERIAL	TYPE	FINISH	MATERIAL	TYPE	FINISH			
100	EXISTING	-	-	-	-	-	-	-	-	-	EXIST		
101	8'0" x 7'0"	ALUM	A	YES	FACTORY	ALUM	-	FACTORY	ALUM	-	FACTORY	NO	16
102	8'0" x 7'0"	ALUM	A	YES	FACTORY	ALUM	-	FACTORY	ALUM	-	FACTORY	NO	16
103	2'0" x 7'0"	HM	B	YES	PAINT	HM	-	PAINT	HM	-	PAINT	NO	15
104	EXISTING	-	-	-	-	-	-	-	-	-	-	EXIST	



1 PARTIAL PLAN
B-7 1/8-1-0

This drawing and all information contained herein, remains the property of SPEAR & ASSOCIATES LLC. It is to be used for the project and location identified herein only. Any information derived from this drawing must be verified and released for any discrepancies. All rights are expressly reserved and this drawing may not be reproduced in whole or in part without the express written consent of Spear & Associates LLC.

Revision Documentation

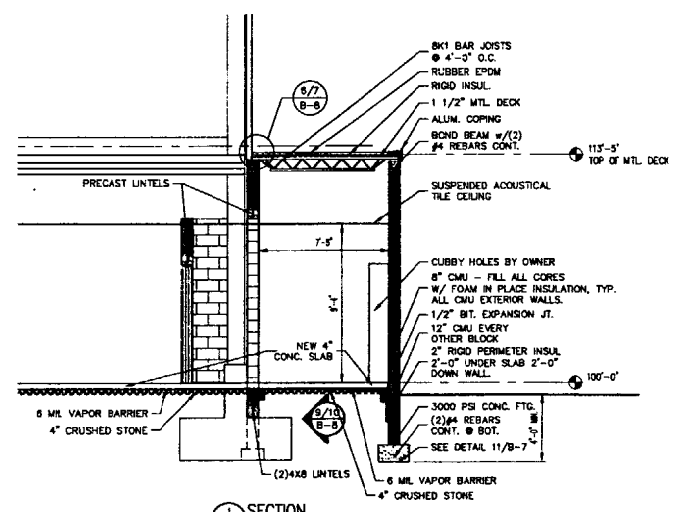
No.	Date	Revision Description
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DATE: OCT. 22, 2001
 SCALE: AS NOTED
 DRAWN BY: B.E.K.
 CHECKED BY: J.A.S.
 CADD DRAWING NUMBER: 01110-8-7

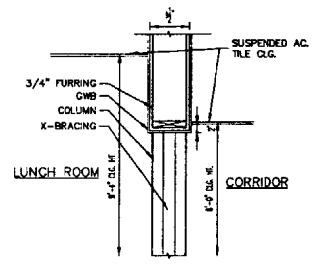
SPEAR & ASSOCIATES LLC
 Engineers and Consultants
 100 Main Street
 Cambridge, Pennsylvania 17308
 Phone: (717) 861-2003 Fax: (717) 861-1888

**15' ST ADDITION - LUNCH ROOM
 TL FOR PLAN AND ELEVATIONS**
 #001 ARCHITECT
BARBER FOODS
 1 ST. JOSEF STREET PAULINA, MISSOURI

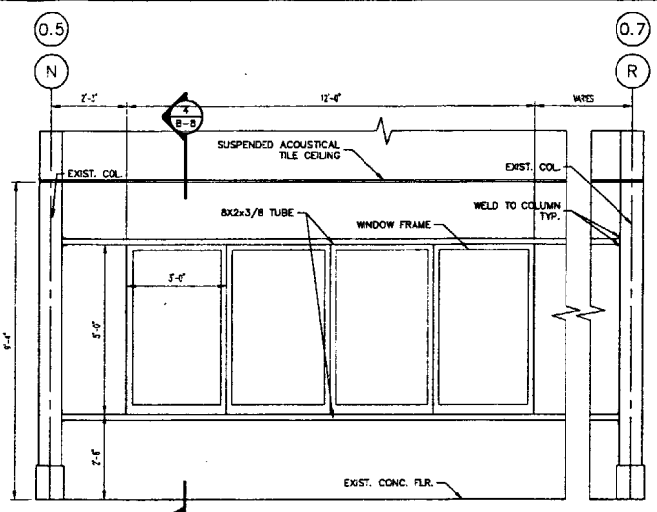
1370
 B-7



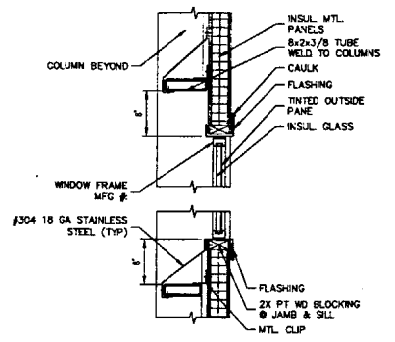
1 SECTION
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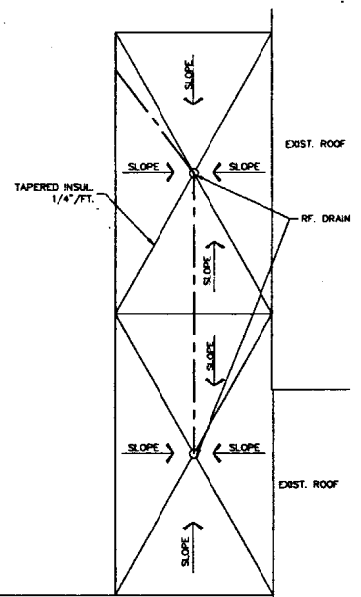
2 DETAIL @ X BRACING
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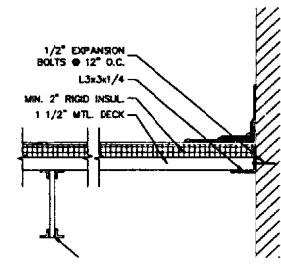
3 WINDOW DETAIL
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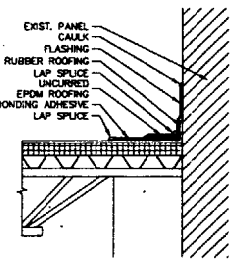
4 WINDOW DETAIL
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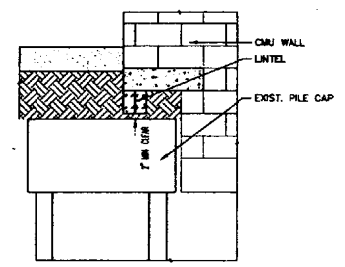
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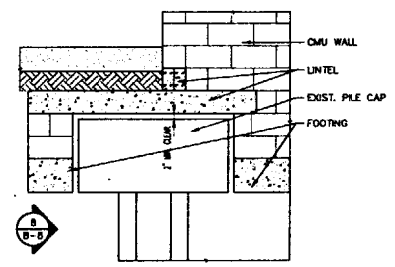
6 ROOF DETAIL
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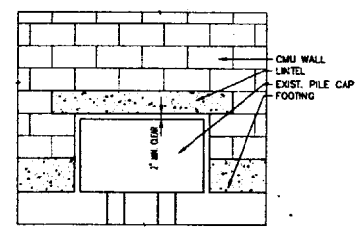
7 ROOF DETAIL
1'-1'-0"



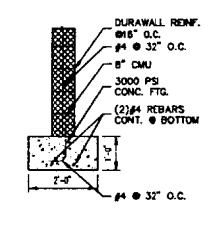
8 LINTEL DETAIL
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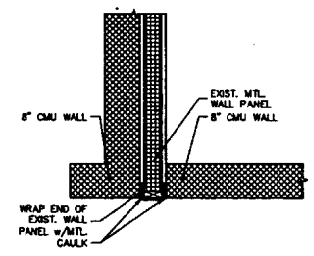
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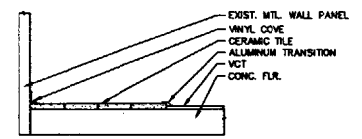
10 LINTEL DETAIL
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11 FOUNDATION DETAIL
1/2'-1'-0"



12 WALL PANEL/CMU DETAIL
1/4'-1'-0"



13 TILE FLOOR DETAIL
1/2'-1'-0"

This drawing and all information contained herein, remains the property of Spear & Associates LLC. All information contained on this drawing is to be used for the PROJECT ONLY. Any information derived from these drawings, in whole or in part, without the express written consent of Spear & Associates LLC, is prohibited.

Revision	Description	Date
1	Issue for PERMITS ONLY	10/22/01
2	Issue for CONSTRUCTION	10/22/01
3	Issue for CONSTRUCTION	10/22/01
4	Issue for CONSTRUCTION	10/22/01
5	Issue for CONSTRUCTION	10/22/01
6	Issue for CONSTRUCTION	10/22/01
7	Issue for CONSTRUCTION	10/22/01
8	Issue for CONSTRUCTION	10/22/01
9	Issue for CONSTRUCTION	10/22/01
10	Issue for CONSTRUCTION	10/22/01
11	Issue for CONSTRUCTION	10/22/01
12	Issue for CONSTRUCTION	10/22/01
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28	Issue for CONSTRUCTION	10/22/01
29	Issue for CONSTRUCTION	10/22/01
30	Issue for CONSTRUCTION	10/22/01

SPEAR & ASSOCIATES LLC
Engineers and Consultants
130 Bank Street
PO Box 68
Tomball, Texas 77375
Phone: (713) 966-2055
Fax: (713) 966-1888

Date: OCT. 22, 2001
Scale: as noted
Drawn By: B.E.K.
Checked By: J.A.S.
CADD Drawing Number: 01110-B-8

WEST ADDITION - LUNCH ROOM
DETAILS
2001 REPAIRS
BARBER FOODS
64 ST. JOEY STREET PUEBLA, MAINE

1370
Project Number
B-8
Sheet Number

BARBER FOODS
SPECIFICATION FOR
West Addition Lunchroom
Portland, Maine

Prepared By:

SPEAR & ASSOCIATES, LLC
Engineers and Consultants
130 Bank Street
Landisville, PA 17538
(717) 898-2053
October 22, 2001



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Section 7512 - Single-ply roofing-----	5
Section 7900 - Sealants-----	3

DIVISION 8 - DOORS AND WINDOWS

Section 8100 – Hollow Metal Doors and Frames-----	5
Section 8300 – Special Doors-----	3
Section 8700 – Finish Hardware-----	8

DIVISION 9 – FINISHES

Section 9300 – Ceramic Tile-----	5
Section 9510 – Acoustical Ceiling-----	4
Section 9650 – Resilient Flooring-----	6
Section 9900 – Painting-----	6

SPEAR & Associates, LLC
Landisville, Pennsylvania

INSTRUCTIONS TO BIDDERS

1. - Bids

Sealed proposals for the General Construction as called for in the specifications dated October 22, 2001 and shown on the Drawings for West Addition Lunchroom, will be received until noon, November 13, 2001.

Bids must be sealed and plainly identified on the envelope as follows:

"Bid For Barber Foods West Addition Lunchroom"

The outside of the envelope shall also contain the Bidder's name and address. All bids shall be addressed to:

Severin and Severin, Inc.
580 Willowbrook Office Park
Fairport, NY 14450
Phone: (716) 385-6940 Ext. 17
FAX: (716) 385-7970
Attn: John B. Severin

A copy of all bids shall be sent to:

Barber Foods
54 St. John Street
Portland, Maine 04102
Phone: (207) 772-1934
FAX: (207) 772-3938
Attn: Mr. Zareh DerHagopian

and

SPEAR and Associates, LLC
130 Bank Street
Landisville, PA 17538
Phone: (717) 898-2053
FAX: (717) 898-1888
Attn: John A. Spear

2. - Rejection of Bids

The Owner reserves the right to reject any and all bids and to waive informalities or to accept any bid, should it be deemed in the interest of the Owner to do so.

3. - Form of Proposal

All bids shall be submitted in accordance with the Proposal Forms as attached hereto.

4.- Bid Documents

A. The following form the Bid Documents:

1. These Instructions To Bidders.
2. Proposal Form.
3. Agreement for Construction.
4. Specification for Construction of West Addition Lunchroom
5. Drawings as scheduled in these Specifications.

B. Bidder shall notify SPEAR & Associates, LLC, immediately of any apparent omission or conflicts noted in the Bid Documents, and which affect the price.

5. - Regularity of Bids

Any bid which is not based on the requirements of the Bid Documents will be considered irregular and may not be considered.

Bids will be considered informal and may be rejected by Owner unless properly signed in the Bidder's handwriting, and dated, including the Lump Sum Price, as called for on Proposal Form contains any written memoranda that may qualify any quotation it contained within the Proposal envelope, but written separately and independent of the Proposal.

6. - Bid Withdrawal

No Bid may be withdrawn within forty-five (45) days after the Bid opening.

7 - Site Visit

Each bidders shall contact Mr. Ed Garrett at the site to schedule a walk-through of the project.

8. - Proposed Schedule of Work

Time is of the essence. The Contractor shall manage the project and perform his work to meet the construction schedule as follows:

- November 20, 2001: Award construction contract.**
- January 18, 2002: Complete all construction.**

The Contractor shall be responsible for all job-related expenses incurred by the Project Manager, Engineer, and Owner beyond the Contract completion date. The expenses shall include travel, salaries, and actual expenses involved in the administration and inspection of the Project.

9. - Subcontractors and Major Suppliers

The Contractor shall supply, where indicated on the Proposal Form, a list of the subcontractors and major suppliers he intends to employ on this project and their specialty and major suppliers and their items. The Owner reserves the right to accept or reject said subcontractors and major suppliers. This list is mandatory. Bids submitted without a list of subcontractors and major suppliers is subject to rejection.



PROPOSAL FORM

Date: _____

Name of Bidder: _____

Barber Foods
54 St. John street
Portland, Maine 04102

Gentlemen:

CONTRACT
DOCUMENTS

Having examined the Instructions to Bidders, Plans and Specifications dated October 22, 2001, Conditions (which include the General Conditions of the Contract for Construction), and Addenda for West Addition Lunchroom, and having examined the premises and circumstances affecting the work, the undersigned offers:

LUMP
SUM

1. To furnish all labor, materials, tools, equipment, transportation, all applicable taxes, things and other facilities, and to perform all work, for the West Addition Lunchroom at the lump sum price of:

_____ Dollars (\$_____).

PERFORMANCE/
PAYMENT
BONDS

2. For furnishing Performance and Payment Bonds, if required:

_____ Dollars (\$_____).

TIME OF
COMPLETION

3. To complete the work covered by this Specification ready for occupancy as outlined in the Instructions to Bidders.

TAXES

4. To pay without reimbursement all Federal, State, and Local Taxes including sales, consumer and use taxes.

SUB-
CONTRACTING

5. To use the following subcontractors:
(List Names and Addresses)

ADDENDA

6. - To agree that the Contract Documents include the following addenda:

Addendum No. 1 dated _____

Addendum No. 2 dated _____

Addendum No. 3 dated _____

ALTERNATES

7. - Alternate A: Delete the patio area work including removal of bollards, sealing of existing asphalt paving, and furnishing and installing site and street furnishings.

Deduct _____ Dollars(\$ _____)

Sincerely,

(Name of Bidder)

(Address of Bidder)

(Signature)

(Bidder's State
of Incorporation)

(Title)

DIVISION 1 - GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

- A. The General Conditions of the Contract for Construction, included herewith shall be made a part of this Specification and the Contractor shall be held responsible for all requirements thereunder affecting his work in any way.
- B. Definitions:
1. Owner/Site: Barber Foods
54 St. John Street
Portland, Maine 04102
 2. Project Manager: Severin and Severin, Inc.
54 St. John Street
Portland, Maine 04102
and
580 Willowbrook Office Park
Fairport, New York 14450
 3. Engineer: SPEAR & Associates, LLC
130 Bank Street
Landisville, Pennsylvania 17538
 4. "The Contractor" shall refer to the General Contractor.

1.02 SCOPE OF WORK

- A. The Contractor shall furnish all labor and materials for complete construction of the work as covered by this Specification. Work not included in this Specification is listed under "Work Not Included In This Contract".

1.03 WORK NOT INCLUDED IN THIS CONTRACT

- A. Existing building construction.

1.04 DESCRIPTION

- A. Work shall include but not be limited to the following: Complete construction of a new one-story entry area; construction of patio area; completion of concrete floor and finishes for a new first floor lunchroom. Work includes: site work, concrete, steel, masonry, building finishes, plumbing, HVAC, fire protection and electrical.

1.05 LIST OF DRAWINGS

- A. The following Drawings form a part of this Specification. It is intended that the Drawings and Specifications shall supplement each other and the Contractor must comply with the requirements of both.

Bid Dwgs.	Rev.	Date	Title
1370-B7	-	October 22, 2001	Floor Plan and Elevations
1370-B8	-	October 22, 2001	Details
1370-M3	-	October 22, 2001	Mechanical Plans
1370-E3	-	October 22, 2001	Electrical Plans

PART 2 - SPECIAL REQUIREMENTS

2.01 OCCUPATIONAL SAFETY AND HEALTH ACT

- A. As a condition of bidding, the Contractor acknowledges he has read, understands, and will comply with requirements of the Department of Labor "Occupational Safety and Health Standards - Part 1910" and its amendments enacted as a part of the Williams-Stieger Occupational Safety and Health Act, April 28, 1971, plus any state and local requirements. The Contractor shall hold regularly scheduled safety meetings as required by his insurance company and/or governmental authorities, and shall be solely responsible,

absolving the Engineer and Owner, for any damage suits for accidents that have occurred to his employees, whether directly or indirectly employed by him.

2.02 TIMING OF WORK

- A. It is imperative that the work covered by this Specification shall be completed for occupancy as noted in the Instructions to Bidders. The Contractor shall see that cooperation between his men and subcontractors be maintained.

2.03 EXAMINATION OF SITE

- A. Prior to bidding, all bidders shall make a field inspection of the job site and carefully appraise all field conditions. Contractor should make direct contact with Mr. Ed Garrett at the site at (207) 772-6491 to schedule a visit.
- B. Bidders shall confer with the Owner's representative and/or the Engineer, prior to bidding, if there are any items shown on the Plans or described herein that are not clearly understood.
- B. No allowance will be made by the Owner or Engineer for lack of information on the part of the Contractor after the bid is submitted and the Contract executed.

2.04 TEMPORARY FACILITIES

- A. The Contractor shall furnish temporary facilities during the period of construction as follows:
 - 1. Field office including telephone and FAX.
 - 2. Temporary water and sanitary toilet facilities.
 - 3. Temporary heat when required for the progress of his work.
 - 4. Temporary electrical connection to the existing Barber Foods electrical system.
 - 5. Temporary lighting as required.
- B. After termination of work, the Contractor shall remove all temporary services.

2.05 SHOP DRAWINGS

- A. The Contractor shall submit for approval to the Engineer the number of copies of Shop Drawings sufficient for his use, plus two copies for the Engineer. Before submittal to the Engineer, the Contractor shall review and stamp his approval on each Drawing. **NO SHOP DRAWINGS WILL BE REVIEWED BY THE ENGINEER UNLESS THE CONTRACTOR'S SIGNED "APPROVED" STAMP APPEARS ON EACH SHOP DRAWING. THE ENGINEER WILL REVIEW THE DRAWINGS AND DISTRIBUTE THEM TO ALL PARTIES CONCERNED.**

2.06 JOB CLEANUP

- A. The Contractor shall be responsible for overall cleanliness of the job site during construction and shall make periodic cleanup of the area, removing the collected materials to an approved dump site off the Owner's property. Combustible materials shall not be allowed to accumulate and shall be removed from the construction area daily.

2.07 BUILDING PERMITS

- A. The Contractor shall be responsible for obtaining a building permit. The Owner will reimburse the Contractor for this cost.

2.08 OVERTIME

- A. The Contractor shall include in his Lump Sum Price all of the labor necessary for completion of the project.**

- C. Overtime that is initiated by the Contractor will not be reimbursable and shall be included in the Lump Sum Price. Contractor shall include in his bid any overtime necessary to complete the project on time.**

2.09 CODES

- A. All work covered by this Specification shall be installed to comply with all applicable codes, ordinances, restrictions, etc.**

2.10 EQUIPMENT AND MATERIALS

- A. All equipment and materials shall be new and the product of a reputable manufacturer. Where manufacturers' names, catalog numbers, or trade names appear on the Drawings, it is not the intent to restrict or eliminate competition, but merely to establish quality of material required. Where the words "or Approved Equal" appear, the "Equal" item must conform to the requirements of the Specifications and must be submitted, with complete information, to the Engineer for approval at least 10 days prior to bidding. Submission of products after that date is done so at the Contractor's risk.**

- B. All costs of additional work required of other trades caused by a substitution of equipment and/or materials shall be borne by the Contractor.**

- C. It is understood that the Drawings cannot show every pipe, specialty or detail; however, the Contractor shall furnish and install all such specialties and equipment necessary for a complete installation in accordance with the normal interpretation of the Plans and Specifications, good practice, and to the satisfaction of the Engineer.**

2.11 AS-BUILT DRAWINGS

- A. The Contractor shall keep a set of Contract Documents; i.e., Specifications, Drawings, Bulletins, Modifications and Shop Drawings at the site and in good order and annotated to**

show all changes made during the construction process. The Contractor shall deliver to the Owner when the Project is completed, two sets of accurate As-Built Drawings showing all field changes made during the course of construction. Final payment will not be made until this is done.

2.12 CHANGE ORDERS

- A. All requests for change orders shall be submitted with back-up information showing quantities and unit prices.**
- B. All requests for change orders which involve the Contractor's forces shall be limited to a 15% markup for the combined total of overhead and profit.**
- C. All requests for change orders which involve a Contractor's subcontractors shall be limited to a 5% markup for the combined total of overhead and profit.**

2.13 BULLETINS

- A. Following the execution of the Agreement Between Owner and Contractor, revisions to the Plans and Specifications will be made by the Engineer in the form of Bulletins. A Bulletin does not authorize a change in the Contract cost or time. Any requests for changes to the Contract time or cost shall be submitted by the Contractor within 10 days of the receipt of the Bulletin.**

2.14 CONSTRUCTION SCHEDULE

- A. Within two weeks after award of Contract, the Contractor shall furnish a schedule of construction showing the sequence of construction of the various phases of work.**

2.15 SUPERVISION

- A. Each Contractor shall personally supervise the work or have a competent superintendent, satisfactory to the Engineer and Owner, on the site at all times during progress with full authority to act for him. Each Contractor shall lay out his work and be responsible for all necessary lines, levels, elevations and measurements. He must verify the figures shown on**

the Drawings before laying out the work and will be held responsible for any error resulting from his failure to do so. All work at the site of the project may be periodically observed by the Engineer.

2.16 EXTENT OF LIABILITY

- A. All Drawings, Specifications and other work product of the Engineer for this project are instruments of service for this project only and shall remain the property of the Engineer whether the project is completed or not. Reuse of any of the instruments of service of the Engineer by the Owner or Contractor on extensions of the project or on any other project without the written permission of the Engineer shall be at the Owner or Contractor's risk and the Owner or Contractor agrees to defend, indemnify and hold harmless the Engineer from all claims, damages, and expenses including attorneys' fees arising out of such unauthorized reuse of the Engineer's instruments of service by the Owner, Contractor, Or By Others Acting Through The Owner Or Contractor.

2.17 WEEKLY PROGRESS REPORTS

- A. It is the responsibility of this Contractor to submit weekly Construction Progress Reports to the Engineer throughout the course of construction. Reports shall be sent by FAX directly to the Engineer with a FAX copy to the Project Manager.
- B. Progress reports shall contain an outline of work completed during the previous week and a projection of work to be completed during the next week.

2.18 EXISTING PLANT OPERATIONS

- A. Since the existing facility is engaged in carrying out normal day-to-day operations, all employees of the Contractor shall be restricted from entering the existing areas and using existing facilities such as phones, restrooms, and lunch rooms.
- B. Contractor shall also keep all construction dirt and debris away from other portions of the existing building and parking lot areas.

2.19 ENGINEER'S FIELD VISITS

- A. The Contractor shall be responsible for providing ladders, lifts, and operating personnel as required for periodic observations upon advance notice from the Engineer or Owner.

2.19 SURVEYING

- A. The Contractor shall be responsible for all the line and grade work as required.

2.20 GUARANTEE

- A. The Contractors shall guarantee all items covered by the specification for one year after acceptance of the facility by the Owner against defective workmanship and materials. Should any defects develop within that period, required repairs or replacements, including labor and materials, shall be made without charge to the Owner.
- B. The Contractor shall guarantee each piece of equipment to meet the capacity and duty requirements hereinafter specified. The adequate and satisfactory mechanical performance of the equipment hereinafter specified shall be the responsibility of the Contractor.

DIVISION 2 - SITE WORK

SECTION 2500 - BITUMINOUS PAVING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work required under this Section shall include all materials, labor, tools, and equipment to construct the bituminous concrete paved areas and coating of existing bituminous concrete as shown on the Drawings. New paving shall be sealed to existing paving with a 6-inch strip of AC-20 hot asphalt.

1.02 SUBMITTALS

- A. Contractor shall submit data indicating compliance with the specifications for the asphaltic concrete mixes.

1.03 QUALITY ASSURANCE

A. Surface Smoothness

1. Test finished surface of each asphalt concrete course for smoothness, using a 10 ft. straightedge applied parallel to and at right angles to centerline of paved areas.
2. Surfaces will not be acceptable if exceeding the following:
 - a. Wearing Course: 3/16 inch in 10 ft.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Bituminous Surface

1. Areas shall receive asphalt wearing course of hot-mixed, hot-laid asphalt concrete as noted on the plans.

B. Pavement Coating

1. Areas shall receive pavement coating as noted on the plans. Coating shall be a colorized polymer emulsion, ColorPave by SealMaster Industries, Sandusly, Ohio, or Approved Equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Before placing any paving, the existing paving shall be inspected for deficient, wet, or soft spots. If inadequate areas are found, the Contractor shall correct this before proceeding further.

3.02 INSTALLATION

A. Bituminous Concrete Wearing Course.

1. Clean existing bituminous surface as required, and place and compact new finish bituminous finish bituminous concrete wearing course in accordance with applicable Maine Department of Transportation specifications. Seal edges at existing asphalt surfaces.

B. Pavement Coating.

1. Clean existing bituminous surface as required, and place pavement coating in two separate surfaces, allowing first coat to dry completely before applying second coat. Application shall be by squeegee. Spraying or brushing will not be permitted.

3.03 PROTECTION

- A. After installation, do not permit personnel traffic on asphalt concrete pavement until it has cooled and hardened; do not permit personnel traffic on pavement topping until it has sufficiently cured. Provide barricades and warning devices as required to protect pavement and the general public.

DIVISION 2 - SITE WORK

SECTION 2870 -- SITE AND STREET FURNISHINGS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. This work shall include benches, park tables, waste containers, ash urns and all related work to provide site and street furnishings as noted on the Drawings.
- B. All excavation, backfill, and grading shall be performed by others.

1.02 SUBMITTALS

- A. Contractor shall submit manufacturer's literature showing compliance with the following:
 - 1. Benches.
 - 2. Park tables.
 - 3. Waste containers.
 - 4. Ash urns.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Equipment shall be heavy gauge perforated steel with a durable thermoplastic coating, by Metal-Form, Wausau, Wisconsin, or Approved Equal. Colors by Owner.
 - 1. Benches shall be Metal-Form model MF2060, or approved equal.
 - 2. Park tables shall be Metal-Form model MF1030, or approved Equal.
 - 3. Waste containers shall be Metal-Form model MR3010 with concrete base, or Approved Equal..
 - 4. Ash urns (snuffers) shall be Metal-Form model MF4001 with concrete base or

SPEAR and Associates, LLC
Landisville, Pennsylvania

Approved Equal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All installation work shall conform to the standards of the manufacturer and good practice. Benches shall be securely anchored to concrete footings meeting the requirements of the manufacturer.**

DIVISION 3 - CONCRETE

SECTION 03300 - CAST-IN-PLACE CONCRETE

1 - GENERAL

1.1 SUMMARY

- A. Work required under this section includes all equipment, materials, devices, labor, and supervision necessary to design and construct all **cast-in-place concrete, concrete reinforcement, and concrete formwork including, slabs on grade, foundation walls, wall and column footings, column piers, and stairs.**

1.2 REFERENCES

- A. The following specifications, codes, and standards of current issue (hereafter referred to by acronym or alpha/numeric designation only) form a part of this specification:

1. American Concrete Institute

- a. ACI 117: Standard Tolerances for Concrete Construction and Materials
- b. ACI 211.1: Recommended Practice for Selecting Proportions for Normal Heavyweight, and Mass Concrete
- c. ACI 221: Guide for Use of Normal Weight Aggregates in Concrete
- d. ACI 301: Specification for Structural Concrete for Buildings
- e. ACI 302: Guide for Concrete Floor and Slab Construction
- f. ACI 304: Guide for Measuring, Mixing, Transporting and Placing Concrete
- g. ACI 305: Hot Weather Concreting
- h. ACI 306: Cold Weather Concreting
- i. ACI 315: Details and Detailing Concrete Structures
- j. ACI 318: Building Code Requirements for Reinforced Concrete
- k. ACI 347: Recommended Practice for Concrete Formwork
- l.

2. American Society for Testing and Materials

- a. **ASTM A185:** **Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement**
- b. **ASTM A615:** **Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement**
- c. **ASTM C31:** **Making and Curing Concrete Test Specimens**
- d. **ASTM C33:** **Specification for Concrete Aggregates**
- e. **ASTM C39:** **Compressive Strength of Cylindrical Concrete Test Specimens**
- f. **ASTM C94:** **Standard Specification for Ready-Mix Concrete**
- g. **ASTM C143:** **Slump of Portland Cement Concrete**
- h. **ASTM C150:** **Specification for Portland Cement**
- i. **ASTM C171:** **Sheet Materials for Curing Concrete**
- j. **ASTM C172:** **Method of Sampling Fresh Concrete**
- k. **ASTM C173:** **Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method**
- l. **ASTM C231:** **Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method**
- m. **ASTM C260:** **Air-Entraining Admixtures for Concrete**
- n. **ASTM C309:** **Liquid Membrane-Forming Compounds for Curing Concrete**
- o. **ASTM C494:** **Chemical Admixtures for Concrete**
- p. **ASTM C881:** **Epoxy-Resin-Base Bonding Systems for Concrete**
- q. **ASTM E1155:** **Standard Test Method for Determining Floor Flatness and Levelness**

3. American Welding Society (AWS)

- a. **AWS D1.4:** **Structural Welding Code - Reinforcing Steel**

4. Concrete Reinforcing Steel Institute
 - a. CRSI: Manual of Standard Practice
5. 1999 BOCA National Building Code with applicable local amendments.

1.3 PERFORMANCE REQUIREMENTS

- A. **Structural Performance:** Design and construct all cast-in-place concrete to sustain the loading conditions stipulated in the 1999 BOCA National Building Code which are imposed on the foundations by the structural framing. Slabs on grade shall be designed to adequately support the Owner supplied equipment. Coordinate equipment loading requirements with the Owner. Coordinate all anchorage requirements with the structural framing provided.

1.4 QUALITY ASSURANCE

- A. The Contractor shall employ skilled personnel and have at least five years of proven, accredited, and satisfactory experience in slab on grade installation. Submit proof of this requirement to the Owner.
- B. Any concrete work which is sufficiently out of line, plumb, level, or size as to cause hardship for this Contractor or others, or which will result in unsightly appearance of the finished structure or which does not meet ACI 117 will be subject to rejection and replacement.

1.5 SUBMITTALS

- A. The Contractor shall submit for review design mixes for all classes of concrete to be used on the job at least fifteen days prior to placing concrete. Design mixes and method of submittal are outlined in Paragraph 2.3.A of this Specification. With each design mix submitted, provide a description where each mix will be used on the project.
- B. Shop drawings depicting all reinforced concrete to be constructed shall be submitted for review before fabrication of any reinforcing steel is started. Shop drawings shall be in complete sets. The shop drawings shall show size and spacing of all reinforcing to be provided.

For all reinforced concrete to be constructed on the project and indicated to comply with design load requirements, submit structural analysis calculations and drawings signed and sealed by the qualified professional engineer responsible for their preparation.

- C. Submit manufacturer's product data, performance criteria and other documentation for each material specified in this Section that is proposed for use, including but not limited to:
 1. Admixtures.
 2. Non-shrink grout.

3. Epoxy adhesive.
4. Premolded joint filler.
5. Reinforcing accessories including high chairs, bolsters, and spacers.
6. Moisture barrier.
7. Latex bonding agent.

Also submit the following information regarding floor slabs:

8. Proposed method for bulkheads and formwork.
9. Proposed placement equipment.
10. Proposed pour sequence and joint layout.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Reinforcing steel shall be delivered to the building site, stored, and covered in a manner which shall insure that no damage shall occur from moisture, dirt, grease, or any other that will impair bond or concrete.

1.7 SITE CONDITIONS

- A. **Cold Weather Placement:** Unless otherwise approved, concrete shall be mixed and placed only when ambient temperature is at least 40°F. If less than 45°F, it shall be rising. Where schedules require placement at lower temperatures, the Contractor shall heat all materials and otherwise prepare so that batching and mixing materials can proceed as specified. Means shall be provided for maintaining concrete at a minimum of 50°F for 7 days after placing, except that where high early strength cement is used, this period may be reduced to seventy-two (72) hours. Approval shall be obtained from the Engineer for methods proposed for heating materials and protecting concrete. No admixtures to prevent freezing will be permitted. All heaters shall be vented to the outside of the building. After the protection period, cooling of concrete shall be no faster than 1°F per hour for the first day and 2°F per hour thereafter. Cold weather placement shall be in accordance with ACI 306.
- B. **Hot Weather Placement**
 1. Hot weather requirements of ACI 305 shall be initiated when mean daily temperatures are expected to exceed 80°F. Concrete shall be delivered to the forms at the coolest practicable temperature. Concrete mixes shall be specifically designed (or redesigned) for hot weather conditions.

2. Concrete placement will not be permitted when, in the opinion of the Engineer, the sun, heat, wind or humidity would prevent proper placement. If deemed necessary by the Engineer, the Contractor shall add a retarding admixture and/or use field applied evaporation retardant for slabs at no added expense to the Owner.
3. During hot weather, all slabs shall be cured by continuous sprinkling for a minimum of 24 hours in addition to other required curing methods. Additional control joints may be required to control shrinkage cracking.

2 - PRODUCTS

2.1 MATERIALS

A. Aggregates

1. Coarse Aggregate: Shall conform to the requirements of ASTM C33, ACI 221 and ACI 301. Coarse aggregate in concrete shall meet ASTM C33 size No. 57 (1" to No. 4). Coarse aggregate in concrete slabs on grade over 5" in thickness shall meet ASTM C33 size no. 467 (1-1/2" to No. 4). All aggregate for this project shall be from one source and of uniform color throughout.
2. Fine Aggregate: Sand shall be capable of developing 90% of the strength of standard Ottawa sand, and shall not contain more than 3% clay. The size of the sand shall be such that not less than 85% shall pass through a 1/4" sieve, not more than 30% through a 50 mesh sieve, and not more than 5% through a 100 mesh sieve. Test reports shall be furnished with design mixes indicating strength and gradation.

B. Cement

1. Normal Portland Cement: Shall be Type I conforming to the requirements of ASTM C150 and shall be used for all concrete work. All cement for this project shall be from one source and of uniform color throughout unless special colors or finishes are noted.
2. High Early Strength Portland Cement: Shall conform to the requirements of ASTM C150, Type III. This cement may be used only with prior written approval from the Owner.

C. Reinforcement

1. Steel Reinforcement: Shall conform to the requirements of ASTM A615. All bars over 1/4" diameter shall be deformed. Minimum yield strength of all bars shall be 60,000 psi.
2. Wire Mesh Reinforcement: Shall conform to the requirements of ASTM A185 and shall be sized as noted on the Structural Drawings. Reinforcing shall be provided in flat sheets and the yield strength shall be 70,000 psi minimum.

3. Reinforcement Accessories: High chairs, spacers, bolsters, etc., shall meet the requirements of CRSI. For metal accessories where legs will be in contact with forms, accessories shall be plastic protected or stainless steel protected.

D. Water

1. Water shall be clean and free from injurious amounts of oil, acid, alkali, organic matter, and other deleterious substances.

E. Admixtures

1. Admixtures may be used only if design mixes utilizing them are submitted to and approved by the Owner.
 - a. Air-entraining admixtures shall conform to ASTM C260, certified by manufacturer to be compatible with other admixtures. Subject to compliance with requirements, air-entraining agent shall be "MB-VR" as manufactured by Master Builders, "Daravair" as manufactured by W.R. Grace, "Air-Mix" as manufactured by the Euclid Chemical Co., or Approved Equal.
 - b. Water-reducing admixtures shall conform to ASTM C494, Type A. Subject to compliance with requirements, admixtures shall be "Pozzolith 322N" as manufactured by Master Builders, "Eucon WR-89" as manufactured by the Euclid Chemical Co., "WRDA Hycol" as manufactured by W.R. Grace, or Approved Equal.
 - c. Water-reducing, retarding admixtures shall conform to ASTM C494, Type D. Subject to compliance with requirements, admixtures shall be "Pozzolith 100XR" as manufactured by Master Builders, "Eucon-75" as manufactured by the Euclid Chemical Co., "WRDA-79" as manufactured by W.R. Grace, or Approved Equal.
 - d. High range water-reducing (HRWR) admixtures shall conform to ASTM C494 Type G or F. Subject to compliance with requirements, admixture shall be "Daracem 100" as manufactured by W.R. Grace, "Eucon 37" as manufactured by Euclid Chemical Corp., or "Rheobuild 1000" as manufactured by Master Builders.
2. Prohibited admixtures include calcium chloride thiocyanates or admixtures containing more than 0.1 percent chloride ions.

2.2 ACCESSORIES

A. Cement Grout

1. Concrete material for grouting around pipes, repairing holes and grouting under machinery and steel bearing and base plates shall be premixed, non-metallic, shrinkage resistant grout complying with CRD C621. Grout shall be "Duragrout" as manufactured by L & M Construction Chemicals, "Masterflow 713" as manufactured by Master

Builders, "Euco NS" as manufactured by Euclid Chemical Co., "Sika Grout 212" as manufactured by Sika Chemical Co., or Approved Equal.

2. Grout shall be mixed, and installed in accordance with the manufacturers requirements.
- B. Moisture Barrier: Moisture barrier under slabs-on-grade and where shown on the Drawings shall be 6 mil polyethylene sheeting, unless shown otherwise, and shall be installed directly over the subgrade with 6" laps at all joints.**
- C. Sealer/Dust-Proofers**
1. Compound shall be VOC compliant and USDA approved. Compound shall conform to ASTM C309 Type I and have 27% solids content minimum. Compound shall not yellow under ultra violet light after 1000 hours of test in accordance with ASTM G53 and shall have test data from an independent testing laboratory indicating a maximum moisture loss in accordance with Federal Specification TT-C-800A of 0.039 grams per sq. cm. when applied at a coverage rate of 300 sq. ft. per gallon. Product shall be "Super Diamond Clear VOX" by the Euclid Chemical Co.; "Dress and Seal WB30" by L & M Construction Chemicals, Inc.; or Approved Equal. Manufacturer's certification required.
 2. Apply compound only in properly ventilated areas using suitable respiratory equipment in strict accordance with the manufacturer's recommendations. Remove food products prior to application. Avoid application when people are present in surrounding areas.
- D. Form Materials**
1. Forms for Architectural Concrete: Natural plywood, metal-framed natural plywood, 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 the Drawings. Use natural plywood complying with U.S. Product Standard PS 1 A-C Grade.
 2. Forms for Non-Architectural Concrete: Plywood, or prefabricated steel forms free of dents and deformations. Provide lumber dressed on at least two (2) edges and one side for tight fit.
 3. Forms for Cylindrical Bollards: Metal, fiberglass reinforced plastic, paper, or fiber tubes. Provide paper or fiber tubes of laminated plies with water-resistant adhesive and wax-impregnated exterior for weather and moisture protection. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.

4. **Form Coatings:** Provide commercial formulation form-coating compounds with a maximum VOC of 350 gm/l that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces. Manufacturer's written guarantee required. Minimum 300° flash point.
5. **Form Ties:** Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units that will leave no metal closer than 1 inch to exposed surface. Provide ties that, when removed, will leave holes not larger than 1 inch diameter in concrete surface.

E. Miscellaneous Materials

1. Concrete joint material for use as filler in expansion joints shall be an expanded polystyrene insulation board with a compressive strength of not over 25 psi for a compression of at least 10% of the original thickness.
2. Slab dowels shall be smooth round bars conforming to the requirements of ASTM A36. Diameter and length shall be as indicated on the contract drawings. Dowel ends shall be sawn; no sheared ends will be permitted.
3. **Non-Slip (NS):** Exterior concrete stoops, and landings shall have fused aluminum oxide grit incorporated in the cement finish. The material shall be a factory graded and packaged, rustproof and non-glazing aggregate unaffected by freezing, moisture and cleaning materials. Product shall be "Frictex NS" as manufactured by Sonneborn Building Products, "Grip-It AO" as manufactured by L&M Construction Chemicals, or Approved Equal. Install in strict accordance with the manufacturer's recommendations.
4. Epoxy adhesive shall be a two component 100% solids material conforming with ASTM C881 and suitable for use on dry or damp surfaces. Provide material "type", "grade", and "class" to suit project requirements. Epoxy adhesive shall be "Sikadur 32 Hi-Mod" as manufactured by Sika Chemical Co., "Euco Epoxy 452 or 620" as manufactured by Euclid Chemical Co., "Epo-Grip" as manufactured by Sonneborn Building Products, "Brutem AB" as manufactured by Master Builders, or Approved Equal. Epoxy adhesives shall be installed in strict accordance with the manufacturer's recommendations.
5. Latex bonding agents shall be non-reemulsifiable acrylic latex based emulsion formulated for bonding wet concrete to hardened concrete. Bonding agent shall be "Everbond" as manufactured by L&M Construction Chemicals, "Flex Con" as manufactured by Euclid Chemical Co., "SikaLatex" as manufactured by Sika Chemical Co., "Acryl Set" as manufactured by Master Builders, or Approved Equal.
6. **Dovetail Anchor Slots:** Minimum 0.024" thick galvanized steel with insulation filled slots, sized to receive dovetail anchors. Coordinate requirements with the Masonry Contractor.

2.3 CONCRETE QUALITY REQUIREMENTS

A. Mix Designs

1. All mix designs shall be proportioned in accordance with Section 5.3, "Proportioning on the Basis of Field Experience and/or Trial Mixtures" of ACI 318 or Section 3.9 "Proportioning on the Basis of Field Experience or Trial Mixtures" of ACI 301.
2. If trial batches are used, the mix design shall be prepared by an independent testing laboratory and shall achieve a compressive strength 1200 psi higher than the specified strength. This over design shall be increased to 1400 psi when specified concrete strengths over 5000 psi are used.

B. Normal Weight Concrete

1. 4000 psi 28-day compressive strength; w/c ratio, 0.55 maximum; for slabs on grade.
2. 3000 psi 28-day compressive strength; w/c ratio, 0.65 maximum for all remaining concrete, unless noted otherwise.
3. Mix designs shall include all admixtures utilized for set-control and water-reducing. Admixtures shall be used in strict compliance with the manufacturer's directions.
4. Concrete used in floor slabs shall achieve a minimum compressive strength of 1800 psi prior to allowing construction activity on the slab.
5. Slump
 - a. Slump for all concrete, except as follows, shall be not less than 1" or more than 4" at point of placement.
 - b. Maximum slump for concrete used in footings shall be 5".
 - c. Concrete containing HRWR admixture shall have a maximum slump of 8" after addition of HRWR to a site verified maximum slump of 3".
6. Concrete may contain a water-reducing admixture used as required for placement and workability.
7. High-range water-reducing (HRWR) admixture may be utilized in pumped concrete for slabs on grade or insulation, architectural concrete, concrete required to be watertight, and concrete with water/cement ratios below 0.50.
8. Use air-entraining admixture in accordance with manufacturer's described rate for all exterior exposed concrete including walks, curbs, aprons, gutters, and equipment pads. Total air content shall conform to ACI 318 Table 4.1.1. Air entrainment content shall be

verified by tests. The average air entrainment shall not have a range of more than $\pm 1.5\%$. Maximum air content for interior slabs on grade shall be 3%.

9. Calcium chloride and fly ash shall NOT be used.
- C. All concrete ready-mixed shall be concrete complying with the requirements of ASTM C94 and as herein specified.
- D. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

3 - EXECUTION

3.1 EXAMINATION

- A. The contractor shall inspect and field verify all surfaces, areas, and present structures in, adjacent, or to which his work is to be installed and insure himself that they are in proper condition to receive the work to be performed under this section.

3.2 INSTALLATION

A. Placing of Reinforcing Steel

1. Metal reinforcement before being positioned shall be thoroughly cleaned of mill and rust scale, and of any other coatings that will destroy or reduce the bond.
2. All reinforcement shall be carefully bent to the required dimensions and in accordance with the requirements of CRSI.
3. All reinforcement shall be placed accurately in position using particular care to place the steel at its proper position in the cross section. The bars shall be held securely in place by ties and bracing in a satisfactory manner so that they will not be displaced by the tamping of the concrete. Slab reinforcing shall be supported on suitable reinforcing chairs or spacing bars.

Minimum lapping shall be as required by design and comply with the 1999 BOCA National Building Code. Wherever possible, lapping of bars to secure sufficient length shall be avoided. However, when used, laps shall occur only at such points as designed by the contractor's qualified engineer.

Install welded wire fabric 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.

4. The Contractor shall furnish and place all steel reinforcement of the size and in the manner required by design. Any additional steel obviously required to meet the requirements of the designed structures shall be furnished at the Contractor's expense.
5. Where wire mesh is used in slabs on grade, it shall be placed using chairs or bolsters to insure proper placement. Supports shall be provided with sand plates or horizontal runners where base material is insulation or will not adequately support chair legs.

B. Formwork

1. The Contractor assumes full responsibility for the complete design and engineering of formwork including shoring and bracing to resist loads due to wet concrete, forms, wind, etc. and other forces arising from use of equipment to place concrete.
2. Obtain the Owner's approval in writing for use of earth cuts as forms for vertical sides of footings and other work not exposed to view. If approved, hand trim sides and bottoms and remove loose earth before placing concrete.
3. Formwork shall be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials. 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. Forms shall be closely fitted to produce clean surfaces without fins or offsets.
4. 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 keyway, reglets, recesses, and the like, to prevent swelling and for easy removal. Bolts and rods shall preferably be used for internal ties; they shall be so arranged that, when forms are removed, no metal shall be within one inch of any surface of concrete. Coat removable bolts and rods with grease. Do not use wire ties where concrete will be exposed to weathering or where discoloration would be objectionable.
5. 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.
6. Form 1/2" x 1/2" minimum chamfered edges on exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

7. Provide openings in concrete formwork to accommodate work of other trades. Determine site and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
8. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retighten forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment. Clean re-used forms of concrete matrix residue. Repair and patch as required returning forms to acceptable surface condition.
9. Coat contact surfaces of forms with a non-staining form coating compound before reinforcement is placed in compliance with manufacturer's instructions.

Thin form-coating compounds only with thinning agent of type, amount, and under conditions of form coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed.

10. Cure formed concrete, 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 in Paragraph 3.6.A. as applicable.
11. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, or similar parts of the work, may be removed after cumulatively curing at not less than 50°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.

C. Placing of Concrete

1. Comply with ACI 301, Chapter 8; ACI 302; and ACI 304 as applicable and as herein specified.
2. Forms and footings shall be cleaned before depositing concrete.
3. All concrete except slabs reinforced with wire mesh shall be placed with the aid of mechanical vibrating equipment. Size of head shall reach between reinforcing and forms. Vibrating shall be transmitted directly through the concrete, not through the forms or reinforcing. Vibrator shall always be inserted through fresh concrete into layer previously placed to eliminate cold joints. All concrete walls shall be vibrated a second time. Floor slabs, including those reinforced with wire mesh, shall be vibrated along formwork.
4. Construction joints shall be made at the end of each day's placement as specified herein.

5. Concrete shall be protected from rain, mechanical injury, the sun, freezing, rapid changes in temperature, loss of moisture, and further construction operations.
6. Tolerances for formed surfaces shall conform to ACI 117.

D. Joints

1. Wall construction joints shall be located in areas of minimum stresses.
 - a. Wall construction joints shall be plumb or level with a continuous key and a chamfer on the exposed edge. Reinforcing shall be continuous through the joint. Before commencing the adjoining concrete work, the joint surface shall be thoroughly cleaned and wetted.
 2. Floor slab construction joints shall be as required by design. Maximum control joint spacing for slabs on grade shall be 36 times the slab thickness. Perform saw cutting as soon as practical after placement and so that the operation will not damage the finished surface. Concrete shall be sawn no later than 24 hours after placement.
 3. Shrinkage Control Joints: All walls shall have formed "vee" groove shrinkage control joints spaced a maximum of 25' on center between construction joints.
- E. Slots, Recesses, Sleeves:** The Contractor shall cooperate with all other Trades in permitting the forming and setting of slots, recesses, chases, sleeves, inserts, bolts, hangers, conduits, etc., and of other Trades not in his Contract.
- F. Embedded Items:** Set and build into work anchorage devices and other embedded items required for other trades that are attached to, or supported by, cast-in-place concrete. Set anchor bolts at correct elevation and position. Use setting drawings, diagrams, instructions, and directions provided by suppliers. Tolerances for placement of embedded items shall conform to ACI 117 Section 6.4.

3.3 REPAIRING SURFACE DEFECTS

- A. Defective Areas:** Repair defective areas immediately after removal of forms.
1. All honeycombed areas, rock pocket voids over 1/4" in any dimension, and other defective areas shall be removed down to solid concrete, but in no case to a depth less than one inch. Make edges of cuts perpendicular to the surface or slightly undercut. Dampen defective area and a strip at least 6 inches wide surrounding the area to be patched.
 2. Coat surface with latex bonding agent in accordance with the manufacturer's recommendations.

3. Apply patching mortar over affected areas. Patching mortar shall consist of 1 part Portland cement to 2 1/2 parts sand by damp volume. Mix white and gray Portland cement as required to produce a color to match the surrounding concrete. Determine color by trial batches. The quantity of mix water shall be no more than necessary for handling and placing. The patching mortar shall be mixed in advance and allowed to stand with frequent manipulation, without addition of water, until it has reached the stiffest consistency that will permit placing.

Thoroughly consolidate mortar into place and strike off to leave patch slightly higher than surrounding surface. Leave undisturbed for at least one hour prior to final finishing. Keep patched area damp for 7 days. Do not use metal tools in finishing patches in a formed wall which will be exposed.

4. Any defective area that cannot be repaired to the satisfaction of the Engineer shall require the complete removal and replacement of the section.
- B. Tie Holes: Patch tie holes immediately after removal of forms. After cleaning and thoroughly dampening tie hole, fill solid with patching mortar as described above.
- C. Remove stains, rust, efflorescence, and surface deposits considered objectionable by the Engineer by methods acceptable to the Engineer. Any stains or other discoloration that cannot be removed to the satisfaction of the Engineer shall require the complete removal and replacement of the section.

3.4 FORMED SURFACE FINISHES

- A. Provide a rough form finish for all surfaces concealed from view such as above ceilings, inside chases or below finish grade, except as specified otherwise. Tie holes and defects shall be patched. Fins exceeding 1/4 " in height shall be chipped off or rubbed off.
- B. Provide a smooth form finish for all exposed to view surfaces.
1. Exposed to view walls and ceilings shall receive a Grout Cleaned Finish in accordance with ACI 301, Chapter 10, unless noted otherwise on the drawings. Exposed concrete surfaces that are to receive a painted finish shall have a completely smooth finished surface. Finishing shall take place immediately upon removal of the forms.
 2. After stripping forms and prior to finishing operations, lightly sandblast walls to expose air pockets and other subsurface defects. Patch tie holes and defects. Rub fins and joint marks with wooden blocks to leave a smooth, unmarred finished surface.
 3. Exterior face of foundations shall have a smooth form finish extending to a minimum of 6 inches below grade.

- C. **Related Unformed Surfaces:** Tops of walls and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth and level after concrete is placed. Float unformed surfaces to a texture reasonably consistent with that of formed surfaces. Final treatment on formed surfaces shall continue uniformly across unformed surfaces.

3.5 SLAB FINISHES

- A. **Shaping to contour:** Use Strike-off templates or approved compacting-type screeds riding on screed rails or edge forms to bring concrete surface to the proper contour.
- B. **Consolidation:** Thoroughly consolidate concrete slabs and use internal vibration in beams and girders of framed slabs and along bulkheads of slabs on grade. Obtain consolidation of slabs and floors with vibrating bridge screeds, roller pipe screeds, or other approved means. Concrete to be consolidated shall be as dry as practicable. Do not permit manipulation of surfaces prior to finishing operations.
- C. **Tolerances for Finished Surfaces**
1. Floor slab flatness shall be $F_f 30/F_1 20$ specified overall value (SOV) and $F_f 18/F_1 13$ minimum local value (MLV) for any individual floor sections which is defined as the area bounded by the slab control joints, unless noted otherwise. Elevation control points for slabs on grade shall conform to ACI 117 Section 2.1.2.3. Only the F_f values are applicable for sloped floors.
 2. Elevated floor slab flatness tolerance shall be $F_f 25$ (SOV) and $F_f 17$ (MLV) for any individual floor section which is defined as the area bounded by column and half column lines. When tested in accordance with ASTM E 1155, 70% of the elevation samples shall fall within a $\pm 3/8$ inch envelope centered on the average floor elevation.
 3. The Contractor shall remedy any floor section measuring below either of the minimum local values for flatness or levelness by grinding or by removal and replacement of the affected areas. Under no circumstance will filling of low spots be permitted. All costs for corrective work will be borne by the Contractor.
- D. **Scratch Finish:** Apply scratch finish to monolithic slab surfaces scheduled to receive a concrete topping or mortar setting bed for tile or brick, and as otherwise indicated. After placing slabs, strike off to a tolerance not exceeding 1/4 inch in 10'-0". Slope surfaces uniformly to drains. After leveling, roughen surfaces before final set with stiff brushes, brooms, or rakes.
- E. **Float Finish**
1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water sheen has disappeared or when concrete has stiffened sufficiently to permit proper operation of power-driven floats, or

both. Consolidate surface with power-driven floats, or by hand floating if area is small or inaccessible to power units.

2. Recheck tolerance of the surface after initial floating. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
3. Apply float finish to slab surfaces to receive a trowel finish, slab surfaces which are to be covered with membrane or elastic waterproofing, and as otherwise indicated.

F. Trowel Finish:

1. To obtain a troweled finish, apply a float finish as previously specified. After power floating, use a power trowel to produce a smooth surface which is relatively free of defects. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Thoroughly consolidate concrete surface by troweling operations. Produce a finished surface free of trowel marks, uniform in texture and appearance, and leveled to the specified tolerances. Surface defects which would telegraph through applied floor covering system shall be ground smooth.
2. Provide a burnished finish (minimum three trowelings) to slab surfaces which are exposed-to-view, except where a broomed finish is specified. Other slab surfaces which are to be covered with resilient flooring, carpet, paint, or other thin film finish coating system shall receive a minimum of two trowelings.

G. Fine Broom Finish: Where ceramic tile, quarry tile, or brick is to be installed with thin-set mortar, apply trowel finish as specified, immediately followed by slightly scarifying the surface with a fine broom.

H. Non-slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps and ramps and elsewhere as indicated. Immediately after trowel finishing, slightly roughen concrete surface by brooming in direction perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

3.6 CURING

A. Concrete not in contact with forms shall be cured by one of the following procedures:

1. Application of absorptive mats or fabric such as burlap, kept continuously wet.
2. Application of waterproof sheet materials conforming to ASTM C171. Edges of sheets shall be overlapped and sealed with waterproof tape. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
3. Curing compounds conforming to ASTM C309, Type I shall be the non-discoloring type and shall not interfere with final floor finishes. Do not use curing compounds on

surfaces to be covered with waterproofing, damp-proofing, membrane roofing, flooring (such as ceramic or quarry tile, brick, glue-down carpet, vinyl tile, etc.) and other coatings and finish materials unless approved by the Owner.

- B. Curing shall start immediately after finishing and be continued for at least 7 days for all concrete.
- C. Following the 7 day moist cure all concrete slabs not receiving a brick finish shall be given two coats of sealer/dust-proofer. Compound shall be applied at a rate and by method recommended by the manufacturer. Apply second coat at the same rate as the first coat immediately after first coat has dried, and prior to traffic being allowed over the area. Do not use sealer on surfaces to be covered with waterproofing, damp-proofing, membrane roofing, flooring (such as ceramic or quarry tile, brick, glue-down carpet, vinyl tile, etc.) and other coatings and finish materials unless approved by the Engineer.
- D. Concrete shall be properly protected from mechanical injury.

3.7 MISCELLANEOUS CONCRETE ITEMS

- A. Grout base plates and foundations as indicated using specified non-shrink grout.
- B. Provide concrete fill for steel pan stair treads, landings and associated items. Screed, tamp, and finish concrete surfaces as scheduled.
- C. Install dowels into existing concrete utilizing epoxy adhesive.

3.8 FIELD QUALITY CONTROL

A. Testing

1. All concrete cylinders shall be molded, stored, transported, and tested by the testing agency. Contractor shall provide all materials from which cylinders are made, and shall provide suitable storage facilities for the cylinders at the job site. It shall be the Contractor's responsibility to notify the testing agency before each placement so that they may properly schedule the taking of test cylinders.
2. At least one set of test cylinders shall be made for each 100 cu. yd., or fraction thereof, of each mix design of concrete placed in any one day.
3. Slump tests shall be conducted continuously during concrete operations. Slump tests shall be in accordance with ASTM C143.
4. Concrete tests shall be made at the job site by an independent testing laboratory hired by the Owner. All costs of testing shall be paid for by the Contractor.

5. Five test cylinders shall be made for each test and tested in accordance with ASTM C39. Two of these cylinders shall be for 7 day tests and two shall be for 28 day tests. Test reports shall be submitted to the Engineer immediately upon completion of each test. Test reports shall contain the following information:
 - a. Exact mix, including quantities of admixtures, etc.
 - b. Date of placement.
 - c. Location of placement in building.
 - d. Slump.
 - e. Percentage of air-entrainment.
 - f. For 28 day test, give 7 day results for previous two cylinders tested. Results shall be reported with both 7 and 28 day results indicated on same report.
6. Test cylinders to be molded and cured in accordance with ASTM C31.
7. Acceptance of the test reports does not in any way relieve the Contractor of his responsibility to insure that the strength, slump, and quality of the in-place concrete meets the requirements of the Contract Documents.

B. Inspection

1. All work herein specified shall be inspected in accordance with the requirements set forth in the 1999 BOCA National Building Code and all local ordinances. All tests and inspections shall be performed by a qualified special inspector hired by the Contractor.
2. Field inspection shall include, but is not limited to:
 - a. Observe all reinforced concrete placement.
 - b. Check size, grade, spacing, and clearances of all reinforcing and wire mesh.
 - c. Check lap lengths.
 - d. See that reinforcing is cleaned.
 - e. See that forms are properly cleaned and oiled when required.
 - f. Check anchor bolt placement.
 - g. Floor slab flatness and levelness in accordance with ASTM E1155. Slab levelness testing shall be performed as the work progresses. For elevated slabs, measurements shall be made prior to removal of shores and forms.

3. Certified field reports indicating that the concrete and reinforcing as built meets all the requirements of the Contract Documents shall be submitted to the Engineer prior to backfilling or other work preventing access for any possible repairs.
4. Contractor's Responsibility: Acceptance of the field inspection does not relieve the Contractor of his responsibility to insure that the project has the proper sizes, strengths, and erection procedures and all other requirements required by the design.

C. Acceptance

1. The concrete contractor shall have the finished floors in the new and future processing areas inspected by the installer of the brick floors in the presence of the Owner. The concrete contractor shall flood the floors to verify that they drain completely. The concrete contractor is required to have the floors accepted by the brick installer before the Owner will accept the floors for payment.

DIVISION 4 - MASONRY
SECTION 4200 - UNIT MASONRY

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. General

1. The Contractor shall furnish all labor, materials, equipment, and services necessary for, reasonably incidental to, the furnishing and installing of all masonry work including reinforcing as shown on the Drawings and/or called for in these Specifications.

B. Work shall include but not be limited to the following:

1. Building into masonry all bolts, anchors, nailers, inserts, flashing, lintels, etc., as furnished and located by other trades.
2. Building in all door and window frames, vents, conduits, etc., as furnished and set by other Trades.
3. Furnishing and installing all lintels above masonry openings.
4. Foam-in-place insulation of all new masonry walls.

1.02 REFERENCES

A. Workmanship and materials shall conform to the latest revision of the following standards hereafter referred to by acronym or alpha/numeric designation only:

1. American Society for Testing and Materials
 - a. ASTM A82: Cold-Drawn Wire for Concrete Reinforcement

- b. **ASTM A153: Zinc Coating (Hot-Dip) on Iron and Steel Hardware**
 - c. **ASTM A615: Deformed and Plain Billet-Steel Bars for Concrete Reinforcement**
 - d. **ASTM C33: Specification for Concrete Aggregates**
 - e. **ASTM C90: Load-Bearing Concrete Masonry Units**
 - f. **ASTM C91: Masonry Cement**
 - g. **ASTM C144: Aggregate for Masonry Mortar**
 - h. **ASTM C150: Portland Cement**
 - i. **ASTM C216: Facing Brick (Solid Masonry Units Made from Clay or Shale)**
 - j. **ASTM C270: Mortar for Unit Masonry**
 - k. **ASTM C404: Aggregate for Grout**
 - l. **ASTM C476: Specification for Grout for Masonry**
- 2. American Concrete Institute**
- a. **ACI 530: Building Code Requirements for Masonry Structures**

1.03 QUALITY ASSURANCE

- A. **The requirements of the governing codes establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified by the contract documents.**

1.04 SUBMITTALS

- A. **Samples**

1. A sample panel approximately 4 feet long by approximately 3' high, and of a typical exterior wall thickness, showing proposed color range, texture, bond, mortar joint, workmanship, and overall materials, shall be erected for review and acceptance by the Engineer prior to starting any masonry work. The panels shall then become the standard of comparison for all masonry work. The panel shall remain until all masonry work is complete and accepted.

B. Brochures

1. Complete manufacturers brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work including technical data, in order that a proper evaluation can be made of the materials, methods, assemblies and construction to be provided.

C. Certificates

1. Prior to delivery, submit to the Engineer certificates attesting compliance with the applicable specifications for grades, types or classes of masonry units included in these Specifications.

1.05 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product's and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.
- B. Cement, lime and other similar perishable materials shall be kept in waterproof storage and shall be dry and fresh when used.
- C. Wall reinforcing, metal ties and anchors shall be protected from contact with soil and before being placed shall be free from loose rust and other coatings that will destroy or reduce bond.
- D. During freezing weather protect all masonry units with tarpaulins or other suitable material. Store concrete masonry units under covers that will permit circulation of air and

prevent excessive moisture absorption. Concrete masonry units shall be protected against wetting prior to use. Material which has not been protected from the weather will be rejected and the Contractor will be required to furnish new material at no additional cost to the Owner.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements:** Comply with the following construction requirements while work is in progress.
- 1. Air temperature 25°F to 20°F:** Use temporary heat source on both sides of masonry wall or other forms of vertical masonry work under construction. In addition, use windbreaks when wind is in excess of 15 mph.
 - 2. Air temperature 20°F and below:** Provide enclosures and temporary heat to maintain air temperature above 40°F in the enclosure. In addition, the minimum temperature of units when laid shall be greater than 20°F.
 - 3. Heat mixing water when air temperature is below 40°F, and heat both mixing water and aggregates when air temperature is below 32°F, to assure mortar temperatures between 40°F and 120°F until used. Do not heat water or sand above 120°F.**
- B. Protection:** During unit masonry erection, cover top of wall with strong waterproof membrane at the end of each day or shutdown. Cover partially completed walls when work is not in progress. Extend the covering a minimum of 24 inches down both sides. Hold coverings securely in place.
- C. Load Application**
- 1. Do not apply uniform roof loading for at least 12 hours after building walls.**
 - 2. Do not apply concentrated loads for at least three days after building masonry walls.**
- D. Freeze Protection:** Protection requirements for completed masonry work and extend shutdowns on partially completed construction are as follows:

1. Mean daily air temperature 40°F: Protect newly laid-up masonry from rain or snow for 24 hours by covering with weather-resistive membrane.
2. Mean daily air temperature 25°F to 20°F: Protect newly laid-up masonry from the elements for 24 hours by covering with weather-resistive insulating blankets, 48 hours for grouted masonry.
3. Mean daily air temperature 20°F and below: Protect newly laid-up masonry by enclosure and temporary heat or weather-resistive heating blankets for 24 hours minimum. For grouted masonry maintain heated enclosure at 40°F for 48 hours.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Concrete Masonry Units: Shall be Grade N, Type 1 conforming to ASTM C90. Use solid load-bearing units at locations indicated on Drawings. Use hollow load-bearing units for all walls where concrete masonry units are indicated on Drawings. Units shall be in modular sizes. Provide special units for corners, piers, sash, lintels and elsewhere indicated on the Drawings. The texture of units shall match the approved samples. Units shall not contain iron spots or other substances that will stain plaster or paint. Blocks to receive paint finish shall have a medium fine texture. Bull nose units shall be used at all exterior corners inside the building including at door frames.
- B. Split Face Block: Units shall conform to the requirements of ASTM C90. After splitting, each block size shall match nominal concrete block standard sizes (3/8" less than nominal dimension) in each direction. No overall dimension may vary more than 1/8" from the standard dimensions. Color of each unit shall be as selected by the Owner, using color additives.
- C. Mortar and Grout:
 1. Portland Cement: Shall conform to ASTM C150, Type I.
 2. Lime: Hydrated lime shall be Type S, conforming to ASTM C207 and shall not contain air-entrainment additives.

3. Sand: Shall conform to ASTM C144 except that sand for mortar in 1/4 inch wide joints shall pass a No. 16 sieve. The Contractor shall have delivered at one time, sufficient sand to insure that all mortar sand is the same and will produce the same color mortar.
4. Aggregate for Grout: Shall conform to ASTM C404.
5. Mixing Water: Shall be clean and potable.
6. Mix mortar materials to produce mortar types as follows in accordance with the requirements of ASTM C270:
 - a. Type S (1800 psi) for all walls.
7. Grout shall conform with the requirements of ASTM C476. Admixtures shall not be used without prior approval of the Engineer. Grout shall have a minimum compressive strength of 2500 psi at 28 days, unless otherwise noted. Slump shall be a minimum of 8" but not more than 11".

Use fine grout for filling spaces less than 4" in one or both horizontal direction. Use coarse grout for spaces equal to or larger than 4".

2.02 JOINT REINFORCEMENT, TIES AND ANCHORING DEVICES

- A. Unless shown otherwise on the drawings, horizontal joint reinforcing shall be ladder type with 3/16" side rods and 9 gauge cross rods at 16". Reinforcing shall be galvanized and as manufactured by Dur-O-Wall, Hohmann & Barnard, or Approved Equal. Use prefabricated corners and tee pieces. Width shall be 2 inches less than nominal wall thickness in which used.
- B. Wire Ties & Anchors: Wire ties and anchors for use in anchoring masonry walls to structural framing shall be 3/16" and 1/4" diameter galvanized steel wire respectively conforming to ASTM A82 and ASTM A153. Ties and anchors shall be as manufactured by Dur-O-Wall, Hohmann & Barnard, or Approved Equal.
- C. All galvanized material shall comply with ASTM A123, Class B2 (1.5 oz. per sq. ft. of wire surface) for zinc coating applied after prefabrication of units.

2.03 REINFORCEMENT

- A. Provide deformed bars complying with ASTM A615.

2.04 ACCESSORIES

- A. Control Joint Filler Strips: Shall be "Rapid Poly-Joint" premoulded joint as manufactured by Dur-O-Wall, or Approved Equal.

- B. Masonry Insulation:

- 1. Inserts shall be expanded polystyrene insulation inserts with a minimum density of 1.0 pcf, a maximum water vapor transmission of 1.4 perm-inch. Inserts shall be molded to fit standard two-core block and shall be factory-inserted at the block plant. Inserts shall be as manufactured by KORFIL or Approved Equal. Remove inserts from all block cells to be filled with grout and /or reinforcing steel.

- 2. Foam-in-place shall be an amino-plast foam insulation with a dry density of 1.0 pcf or less: Core-Fill 500 by Tailored Chemical Products, Hickory, NC; or Thermco Foam Insulation, Mount Pleasant, Iowa; or approved equal.

- C. Masonry Water Repellent:

- 1. Water repellent shall be "Enviroseal 40" as manufactured by Hydrozo Water Repellents, Shakopee, MN, or Approved Equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas and other contingent construction in or to which his work is to be installed and ensure himself that they are in proper condition to receive the work to be performed under this Section. The Contractor shall notify the Engineer in writing, before any work is installed, of any condition requiring correction. Failure to make such a report shall be construed as acceptance of the existing conditions and the responsibility to provide an acceptable installation.

3.02 PRECAUTIONS AND GENERAL REQUIREMENTS

- A. See paragraph 1.06.A for environmental requirements. Suitable means, as approved by the Engineer, must be provided to heat materials, protect work from cold and frost and insure that mortar will harden without freezing. No anti-freeze ingredient shall be used in the mortar.
- B. Protect facing material against staining, and keep tops of walls covered with non-staining waterproof coverings when work is not in progress. When work is resumed, top surface of work shall be cleaned of all loose mortar, and, in drying weather thoroughly wet, except for concrete masonry units.
- C. Before closing up any pipe, duct or similar inaccessible spaces or shafts with masonry, remove all rubbish and sweep out the area to be enclosed.
- D. Provide level and solid bearing in masonry walls directly under poured concrete slabs, structural steel beams, trusses, and steel joists. Solid bearing shall be of sizes and thickness indicated and consist of at least 3 courses of brick, or 1 course of solid or grout filled concrete masonry units.
- E. The open space at expansion joints shall be kept free of mortar by using a continuous wood or metal strip temporarily set on the wall.
- F. Where fresh masonry joins masonry that is partially set or totally set, clean the exposed surface of the set masonry and wet it lightly so as to obtain the best possible bond with the new work. Remove all loose units and mortar. If it is necessary to "stop-off" a horizontal run of masonry, this shall be done by racking back one-half unit length in each course. Tothing will not be permitted.
- G. Consult other Trades and make provisions that will permit the installation of their work in a manner to avoid cutting and patching. Build in work specified under other sections, as necessary, and as the work progresses. Set steel lintels in beds of mortar. Fill spaces around jambs and heads of metal door bucks and frames, solidly with mortar. Build in all anchor bolts and bearing plates for steel work.

3.03 INSTALLATION

A. Mixing Mortar

1. Mix all cementitious materials and sand in a mechanical batch mixer for a minimum of 5 minutes. Adjust the consistency of the mortar to the satisfaction of the mason but add only as much water as is compatible with convenience in using the mortar. If the mortar begins to stiffen from evaporation or from absorption of a part of the mixing water, retemper the mortar immediately by adding water, and remix the mortar. Add waterproofing admixture as hereinbefore specified. All mortar shall be used within 2-1/2 hours of the initial mixing. It shall not be used after it has begun to set.

B. Laying Concrete Masonry Units

1. Set units plumb and true to line. All units shall be laid with level horizontal joints. Except where specified or shown otherwise, units shall be laid in "running bond".
2. Masonry backing on exterior walls and all interior masonry partitions shall terminate against beam soffits or structural ceilings. Wedge partitions tight to ceiling and beams and fill joints at top with mortar.
3. Continuous joint reinforcement specified shall be laid in alternate horizontal joints of all concrete masonry unit walls and in two horizontal joints above and below all openings. Reinforcement shall be lapped 8 inches minimum at all splices to insure continuity and all corners shall be cut and bent.
4. Bond each course at corners in a masonry bond and at intersections with metal ties, anchors, or joint reinforcement spaced vertically not exceeding 16 inches.
5. Partitions of all units that abut exterior walls, and other partitions shall be bonded in or be anchored thereto once every 16 inches in height. Where anchors are used, they shall be 1/8 by 2 inch zinc-coated steel anchors with ends turned up 2 inches and extending 4 inches into wall and not less than 8 inches into partitions; or anchors may be of type to fit the slots in concrete.
6. Anchor masonry walls to structural framing with wire ties and anchors as indicated on the Drawings. Wire ties shall be embedded into masonry a minimum of 1/2 the wall thickness.

7. Joints of all concrete masonry units that will be exposed or painted shall be cut flush and tooled when thumbprint hard to form a concave.
8. Lay all hollow concrete masonry units with full mortar bed, including all face shells and cross webs. Lay solid units with full head and bed joints. Make joints uniform, approximately 3/8 inch thick unless indicated otherwise.
9. Provide continuous vertical control joints in concrete masonry unit walls and partitions at maximum 40 feet on centers or at specific locations indicated on Drawings. Form joints as detailed, or approved. Joints shall contain no mortar, but shall be filled completely with control joint filler strip. The surfaces shall be caulked.

C. Reinforced Hollow Unit Masonry

1. Lay hollow concrete masonry units in accordance with Paragraph 3.03.B.
2. End walls and cross webs shall be full bedded in mortar to prevent leakage of concrete, unless wall is to be poured solid.
3. Vertical cells to be filled shall have vertical alignment sufficient to maintain a clear, unobstructed continuous vertical cell. They shall have a minimum clear dimension of 2" and clear area of 8 sq. in. for low-lift grouting, and a minimum clear dimension of 3" and clear area of 10 sq. in. for high-lift grouting. Excessive mortar fins and any other obstructions shall be removed from cells to be grouted.
4. All cells containing reinforcement, as indicated on the Drawings, shall be filled solid with grout. Prior to grouting, inspect and clean grout spaces. Remove dust, dirt, mortar droppings, loose pieces of masonry and other foreign materials from grout spaces. Clean reinforcement and adjust to proper position. Clean surface of structural members supporting masonry to ensure bond. After final cleaning and inspection, close cleanout holes and brace closures to resist grout pressure.
5. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist displacement of masonry units and breaking of mortar bond. Install shores and bracing, if required, before starting grouting operations.

Place grout by pumping into grout spaces unless alternate methods are acceptable to the Engineer.

6. Limit grout pours to sections which can be completed in one working day with not more than one hour interruption of pouring operation. Place grout in lifts which do not exceed 5'. Allow not less than 30 minutes nor more than one hour between lifts of a given pour. Rod or vibrate each grout lift during pouring operations. Place grout in lintels or beams over openings in one continuous pour.
7. Where bond beam occurs more than one course below top of pour, fill bond beam course to within 1" of vertically reinforced cavities, during construction of masonry. When more than one pour is required to complete a given section of masonry, extend reinforcement beyond masonry as required for splicing. Pour grout to within 1-1/2" of top course of first pour. After grouted masonry is cured, lay masonry units and place reinforcement for second pour section before grouting. Repeat sequence if more pours are required.
8. Reinforcing shall be lapped spliced in accordance with ACI 530.
9. All reinforcing shall be in place prior to grouting. Vertical reinforcing bars shall be held in position at vertical intervals not exceeding 192 bar diameters nor 10 feet.

3.04 POINTING AND CLEANING MASONRY

- A. Point all holes in exposed masonry. Cut out defective joints and repoint them with mortar.
- B. Concrete masonry units shall have all loose mortar cleaned off and all stains removed. All exposed masonry shall be cleaned thoroughly. Before applying any cleaning agent to the entire wall, it shall be applied to a sample wall area of approximately 20 sq. ft. in a location approved by the Engineer. No further cleaning work shall proceed until the sample area has been approved by the Engineer, after which time the same cleaning materials and method shall be used on the remaining wall area. If stiff brushes and water do not suffice, the surface of unglazed masonry on which no green efflorescent appears, shall be thoroughly cleaned with a detergent type cleaner in strict accordance with the manufacturer's instructions. All sash, metal lintels, louvers and other corrodible parts shall be thoroughly protected. Green efflorescent shall be removed in accordance with the unit masonry product manufacturer's recommendation.

- C. Extreme caution shall be exercised in all cleaning operations to protect all adjacent work from staining and damage of any kind.**

3.05 SEALING MASONRY

- A. After cleaning, all unpainted exterior concrete masonry units and split face block shall receive the recommended amount of integral water repellent.**

DIVISION 5 - METALS
SECTION 05200 - STEEL JOISTS

1 - GENERAL

1.1 SUMMARY

- A. Work required under this section includes all materials, equipment, devices, labor, and supervision necessary for, and reasonably incidental to, the design, fabrication and erection of all steel joists and joist girders, including bridging, bearing plates, anchors, headers, top and bottom chord extensions, ceiling extension rods, temporary bracing, etc., as shown required and described in these Specifications.

1.2 REFERENCES

- A. Workmanship and materials shall conform to the latest revision of the following standards hereafter referred to by acronym or alpha/numeric designation only:
1. SJI: Steel Joist Institute - Standard Specifications and Load Tables for All Steel Joists
 2. AWS: American Welding Society
 3. AISC: American Institute of Steel Construction - Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design
 4. ASTM: American Society for Testing of Materials
 5. 1999 BOCA National Building Code with applicable amendments

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Design and fabricate joists and girders capable of sustaining all loads stipulated in the 1999 BOCA National Building Code, including building dead loads, roof and floor live loads, wind loads and seismic loads. Framing members shall safely carry all design loads without exceeding the allowable design working stress or deflection criteria set forth in the building code. Apply loads in accordance with the load combinations stipulated by the code. Coordinate mechanical equipment loads to be supported by joists and girders with the mechanical contractor.

1.4 QUALITY ASSURANCE

- A. The requirements of SJI shall establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified by the Contract Documents.
- B. Steel joist manufacturer shall have a current certification from the SJI to manufacture joists conforming to SJI standard specifications and shall utilize qualified professional engineer qualified to practice in the State of Maine to prepare design calculations, shop drawings, and other structural data.
- C. Comply with the applicable provisions of AWS D1.1 and AWS D1.3 in the manufacture of all joists, joist girders, and joist accessories.

1.5 SUBMITTALS

A. Shop Drawings

- 1. Before proceeding with work, complete Erection Drawings and joist and girder calculations shall be submitted to the Owner's Engineer for his review. Review of Shop Drawings must be obtained prior to fabricating any material or proceeding with the work. All shop drawings and calculations shall be signed and sealed by the qualified engineer responsible for their preparation.
 - 2. Shop and Erection Drawings shall be complete in all details and shall indicate layout, mark, type, location, and spacing for all members. Details shall clearly indicate all typical and special connections, bearing requirements, bridging, and accessories, and shall accurately indicate the member's location relative to walls, spandrel sections, openings, or other construction features. The welding symbols used on the Shop Drawings shall be those adopted by the AWS.
- B. Written verification shall be provided by the joist manufacturer certifying that the joists and joist girders comply with SJI standard specifications.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Joists shall be stored and protected in such a manner as to prevent distortion of the members and injury to the paint.
- B. Joists shall be supported free of the ground, kept clean, and protected from the elements.

2 - PRODUCTS

2.1 MATERIALS

- A. Steel: Comply with the requirements of the SJI standard specifications for chord and web section material.
- B. Welding Material: Comply with AWS standards.
- C. High Strength Bolts: Furnish bolts, nuts and washers conforming with ASTM A325. Furnish each type and size of bolt and nut of same manufacture and of same lot.
 - 1. Bolts: Heavy, hexagon head high strength structural bolts, of standard size, of lengths required for thickness of members joined and for type of connection.
 - 2. Nuts: Heavy hexagon carbon steel nuts.
 - 3. Washers: Flat and smooth hardened carbon steel washers.
- D. Machine Bolts and Anchor Bolts: Unfinished bolts conforming with ASTM A307, Grade A, with hexagon heads and nuts were exposed in the finish work. Furnish common bolts of lengths required to suit thickness of material being joined. Provide flat, unhardened steel washers.
- E. Primer Paint: Paint shall be gray and shall meet the performance requirements of the SJI Specifications for Open Web Steel Joists, Long Span Steel Joists, and Joist Girders.

2.2 MANUFACTURED UNITS

- A. Steel Joists and Joist Girders
 - 1. Manufacture joists according to SJI standard specifications with steel angle top and bottom chord members, of the type, end arrangement, and top chord configuration indicated on the drawings.
 - 2. Joist span, depth, type, minimum capacity, and maximum spacing to be determined by the contractor's qualified engineer. It shall be the responsibility of the joist manufacturer to supply joists which meet these requirements.
 - 3. Extend top chords and bearing ends as required. Extensions shall comply with SJI standard specifications and load tables, and shall extend back into joists as required to fully develop all bending and shear stresses.
 - 4. Roof joists shall be designed for a net uplift from wind as determined by the contractor's qualified engineer.

5. Comply with AWS requirements and procedures for shop welding, appearance and quality of welds, and methods used in correcting welding work.
6. Provide special bearing depths where required. When less than the minimum bearing required by SJI is available, the manufacturer shall design the joist seat to accommodate the bearing length provided.

B. Joist Accessories

1. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI standard specifications for the type of joist, chord size, spacing, and span provided. Provide additional bridging as required by the contractor's qualified engineer.
2. Supply ceiling extensions, either extended bottom chord elements or a separate extension unit of sufficient strength to support ceiling construction. Extend ends to within 1 inch of finished wall surface.
3. Supply miscellaneous accessories, including splice plates and bolts required to complete the joist installation.

2.3 SURFACE PREPARATION AND PRIME PAINTING

- A. Clean and remove loose scale, heavy rust, and other foreign material from fabricated joists and accessories before application of shop paint. Surface preparation shall conform to either hand tool cleaning, SSPC - SP2, or power tool cleaning, SSPC - SP3.
- B. Apply one shop coat of gray steel prime paint to joists and accessories by spray, dipping or other method to provide a continuous dry painting film thickness of not less than 1 mil.

3 - EXECUTION

3.1 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas, and other contingent construction in or to which his work is to be installed and assure himself that they are in proper condition to receive the work to be performed under this Section. Check elevation and location of bearing plates and similar devices.

3.2 PROTECTION

- A. Protect existing construction from damage during work performed in this section.

3.3 INSTALLATION

- A. Do not install joists until supporting construction is in place and secured.

- B. Install joists and accessories plumb, square, and true to line. Securely fasten to supporting construction according to SJI standard specifications, joist manufacturer's recommendations, the details shown on the drawings, and the requirements of the Section.
 - 1. Before installation, joists delivered to the project site in more than one piece shall be assembled.
 - 2. Space, adjust, and align joists accurately in location before permanently fastening.
 - 3. Install temporary bracing and bridging, connections, and anchors to ensure joists are stabilized during construction.
- C. All joists shall be properly anchored to their supports. Anchorage shall be by bolting or welding, and shall as a minimum meet the requirements of the SJI standard specifications.
 - 1. Field weld joists to supporting steel framework and steel bearing plates. Coordinate welding sequence and procedure for placing of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - 2. Bolt joists to supporting steel framework using carbon steel bolts. Long span joists and joist girders shall be bolted to supporting framework using high strength structural bolt. Comply with Research Council on Structural Connections "Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts" for installation and tightening requirements.
- D. Install and connect bridging concurrently with joist erection in accordance with SJI standard specifications and before any construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams. Coordinate the joist bridging with other building components (mechanical duct work, lighting, ceilings, etc.), coordination shall be accomplished prior to submission of Shop Drawings.
- E. Reinforcing angles shall be added to joists where concentrated loads fall between panel points.
- F. All field welders shall be certified, qualified operators in accordance with the requirements of the AWS, for the materials and methods being used.

3.4 FIELD QUALITY CONTROL

A. Testing and Inspection

- 1. All work herein specified shall be inspected in accordance with the requirements set forth in the 1999 BOCA National Building Code and all local ordinances. All tests and inspections shall be performed by a qualified special inspector hired by the Contractor.

2. **Contractor's Responsibility:** Acceptance of the shop and field inspection done by the special inspector pertaining to the steel joists does not relieve the Contractor of his responsibility to insure that the project has the proper member sizes and material strength required by design and that fabrication and erection procedures used are in accordance with all customary procedures.

3.5 REPAIRS AND PROTECTION

- A. Following installation, promptly clean, prepare, and re-prime field connections, rust spots, and abraded surfaces of prime painted joists, accessories, bearing plates, and abutting structural steel.
 1. Clean and prepare surfaces by hand tool cleaning, SSPC - SP2, or power tool cleaning, SSPC - SP3.
 2. Apply a compatible primer of the same type as the shop primer used on adjacent surfaces.
- B. Provide final protection and maintain conditions, in a manner acceptable to the manufacturer and installer, to ensure that All work included in this section is without damage or deterioration at the time of Substantial Completion.

DIVISION 5 - METALS
SECTION 05300 - METAL DECKING

1 - GENERAL

1.1 SUMMARY

- A. Work required under this section includes all equipment, materials, devices, labor, and supervision necessary for and reasonably incidental to the design, furnishing and installing of the metal deck required by this project.

1.2 REFERENCES

- A. Workmanship and materials shall conform to the latest revision of the following standards hereafter referred to by acronym or alpha/numeric designation only:

- | | |
|---------------|---|
| 1. SDI: | Steel Deck Institute - Specifications |
| 2. AISI: | American Iron and Steel Institute - Specifications for the Design of Cold-Formed Steel Structural Members |
| 3. ASTM A446: | Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural Quality |
| 4. ASTM A525: | General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process |
| 5. ASTM A611: | Steel, Sheet, Carbon, Cold-Rolled, Structural Quality |
| 6. AWS: | American Welding Society |
| 7. | 1999 BOCA National Building Code with applicable amendments |

1.3 QUALITY ASSURANCE

- A. The requirements of SDI shall establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified by the Contract Documents.
- B. All welders shall be certified by the AWS.

1.4 SUBMITTALS

A. Shop Drawings

1. The Contractor shall submit complete erection diagrams, shop details, and deck section properties for review by the Owner's Engineer.

1.5 DELIVERY, STORAGE AND HANDLING

- A. All metal deck shall be stored in such a manner as to prevent distortion to the members and injury to the finish. All metal deck shall be stored off the ground with one end elevated to provide drainage and shall be protected from the elements with a waterproof covering, ventilated to avoid condensation.

2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Metal Deck

1. The metal deck shall be of the depth and gauge required by the contractor's qualified engineer's design and shall meet the requirements of the SDI and these Specifications. Subject to compliance with the requirements of the specifications, provide products by one of the following: Bowman/E.G. Smith, Div. Cyclops Corp., Epic Metals Corp., Roll Form Products, Inc., United Steel Deck, Inc., Verco Manufacturing Co., Vulcraft/ Div. Nucor Corp., or Wheeling Corrugating Co.
2. All deck shall be roll formed from steel sheet conforming to ASTM A653 having a minimum yield strength of 33 ksi. The steel shall receive, before forming, a metal protective coating of zinc, conforming to ASTM A525, G60 Coating Designation.
3. Panel design shall be in accordance with AISC.

2.2 MATERIALS

- A. Closures and Closure Plates: Steel sheet conforming to ASTM A526, commercial quality, galvanized 16 gauge minimum unless otherwise noted.
- B. Ridge and Valley Plates: Shall be fabricated from single width steel sheet in 20 gauge thickness of the same metal and finish as the specified roof deck. Sections to be as long as possible. Fabricate to form transition slopes required, not less than 4-1/2" effective width, with 3" flange for securing to roof deck.
- C. Flexible Closure Strips: Manufacturer's standard vulcanized closed-cell, synthetic rubber.
- D. Galvanizing Repair Paint: High zinc-dust content paint for application on metal surfaces which have been chemically cleaned and phosphate chemical treated.

- E. Metal Roof Sump Pans: Fabricate from single piece 14 gauge minimum galvanized sheet steel with level bottoms and sloping sides to direct water flow to drain, 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 or required by deck configuration. Holes for drains will be cut in the field.

3 - EXECUTION

3.1 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas, and other contingent construction in or to which his work is to be installed and assure himself that they are in proper condition to receive the work to be performed under this Section. The Contractor shall notify the Engineer in writing, before any work is installed, of any condition requiring correction. Failure to make such a report shall be construed as acceptance of the existing conditions and the responsibility to provide an acceptable installation.

3.2 INSTALLATION

- A. Erection of deck and accessories shall be done by deck manufacturer or by his authorized erector.
- B. Metal decking shall be erected and secured with corrugation edges up and with corrugations perpendicular to supports. Deck fastening shall be as determined by the contractor's qualified engineer. Sheets should be placed end-to-end along one side of the building. Adjacent rows are placed in like manner, side lapping one corrugation with previously placed row. End laps shall always occur over supporting joist, beams, or purlins, and should be centered over the support. Minimum end lap is 2" for welded attachment. Bottom sheet should not extend beyond edge of support flange.
- C. Metal decking used as permanent form for concrete slabs shall be attached to supports at 12" o/c maximum. Attachment shall be made by puddle welds. Side laps shall be as shown on the Drawings.
- D. Damaged, bent, or dished sheets shall be rejected and removed from the site.
- E. After erection, the deck shall again be cleaned and all field bolts, welds, and any damaged surfaces shall be spot painted with an approved high zinc dust content, galvanizing repair paint.
- F. All closures, shear plates, and accessories shall be provided where shown on the Drawings or required.

3.3 CUTTING AND FITTING

- A. Field cut metal decking to fit around columns, supports and projections where indicated and/or required. Ensure that information on size and location of openings is obtained before fabrication commences.
- B. Saw-cut openings in metal deck for passage of mechanical equipment, supports, and similar construction. Provide steel angle frame around such openings, as detailed on structural framing plans. Mechanically fastened deck using self-tapping screws to framing angles.
- C. Perform cutting using power devices without the use of torches. Accuracy of the opening shall be to within 1/8" of the opening size shown.
- D. Provide metal joint covers at abutting ends and changes in direction of floor deck units.
- E. Place roof sump pans over openings provided in roof decking and weld to top decking surface. Space welds not more than 12" o.c. with at least one weld at each corner. Cut opening in roof sump bottom to accommodate drain size indicated.
- F. 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. Provide flexible closure strips instead of metal closures, at Contractor's option, wherever their use will ensure complete closure. Install with adhesive in accordance with manufacturer's instructions.

3.4 FIELD QUALITY CONTROL

A. Testing and Inspection

- 1. All work herein specified shall be inspected in accordance with the requirements set forth in the 1999 BOCA National Building Code and all local ordinances. All tests and inspections shall be performed by a qualified special inspector hired by the Contractor.
- 2. Contractor's Responsibility: Acceptance of the shop and field inspection done by the special inspector pertaining to the metal deck does not relieve the Contractor of his responsibility to insure that the project has the proper member sizes and material strength required by design and that fabrication and erection procedures used are in accordance with all customary procedures.

3.5 PROTECTION

- A. After deck is in place, it shall be immediately protected from damage by placing wood planks over any area where workmen will work or walk, and/or where materials will be transported or stored.
- B. Protect existing construction from damage during work performed in this section.

3.6 REPAIRS AND TOUCH UP/ADJUSTMENT

- A. Any decks damaged by the Contractor shall be repaired or replaced by the Contractor to the satisfaction of the Engineer and such repairs made at no additional cost to the Owner.

DIVISION 5 - METALS

SECTION 05500 - MISCELLANEOUS METALS

1 - GENERAL

1.1 SUMMARY

- A. Included under this Section is the design, furnishing and installation of all items of **miscellaneous steel and metal fabrication** or other work listed, but not limited to, below and/or as shown on the Drawings.
- B. Items Included
 - 1. Steel angle lintels.
- C. Related Work Specified Elsewhere
 - 1. Field Painting - Under Section 09900.

1.2 REFERENCES

- A. All design, workmanship and materials shall conform to the latest revision of the following standards hereafter referred to by acronym or alpha/numeric designation only:
 - 1. ASTM A36: Structural Steel
 - 2. ASTM A53, Gr. B: Pipe, Steel, Black and Hot-dipped, Zinc-coated Welded and Seamless Steel Pipe
 - 3. ASTM A123: Zinc Hot-Dipped (Galvanized) Coating on Iron and Steel Products
 - 4. ASTM A153: Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 5. ASTM A307: Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
 - 6. ASTM A386: Practice for Providing High Quality Zinc Hot- Dipped (Galvanized) Coating on Iron and Steel Products
 - 7. ASTM A501: Hot-formed Welded and Seamless Carbon Steel Structural Steel Tubing
 - 8. AISC: American Institute of Steel Construction - Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design

9. AWS: American Welding Society - All applicable specifications listed in AISC above

B. 1999 BOCA National Building Code with all applicable local amendments.

1.3 QUALITY ASSURANCE

A. The requirements of the governing building codes and standards establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified by the Contract Documents.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the State of Maine and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installation of metal stairs ladders, and railings.

C. All welders in the field for shop shall be certified by the AWS.

1.4 SUBMITTALS

A. Shop Drawings

1. This Contractor shall prepare and submit complete shop and erection drawings for approval prior to fabrication.

2. The drawings shall show all miscellaneous metal work showing all dimensions, details of construction, details of installation, relation to adjoining work, reinforcement, welds, fastenings, anchorage, specifications of shop finishes and other items as required or specified in order that a proper evaluation can be made of the materials and construction to be provided. Shop drawings shall be signed and sealed by the qualified professional engineer responsible for their preparation.

3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 DELIVERY, STORAGE AND HANDLING

A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

2- PRODUCTS

2.1 MATERIALS

- A. All angles, channels, plates, bars, and other structural shapes shall be ASTM A36 steel (Fy = 36 KSI).

2.2 FABRICATION

- A. Except steel to be completely encased in concrete, galvanized surfaces and excepting edges and surface areas adjacent to edges to be field welded, all steel work shall be given one shop coat of gray metal primer. The applied primer shall be compatible in all respects to the material to be used for the final finishes.
- B. Anchors that are built into masonry shall be coated with asphalt paint unless specified to be galvanized. Where hot-dip galvanized or zinc-coated metal is specified or shown, it shall not be shop primed unless specifically required.
- C. Hot-dip galvanizing or zinc coatings applied on products fabricated from rolled, pressed and forged steel shapes, plates, bars and strips shall comply with ASTM A123. Hot-dip galvanizing or zinc coatings on assembled steel products shall comply with ASTM A386. The weight of coatings shall be as designated in Table 1 for the class and thickness of material to be coated. Galvanized surfaces for which a shop coat of paint is specified shall be chemically treated to provide a bond for the paint. Except for bolts, nuts, and like items, all galvanizing shall be done after fabrication.

3 - EXECUTION

3.1 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas and other contingent construction in or to which his work is to be installed and assure himself that they are in proper condition to receive the work to be performed under this Section. The Contractor shall notify the Engineer in writing, before any work is installed, of any condition requiring correction. Failure to make such a report shall be construed as acceptance of the existing conditions and the responsibility to provide an acceptable installation.
- B. This Contractor shall make field measurements of all areas to receive installations. The Contractor shall notify the Engineer in writing, before any work is fabricated, of any dimensional discrepancies. This Contractor shall be responsible for the proper fit of items of this section into existing work. Corrective measures including field adjustment and refabrication are required as directed by the Engineer for all items which do not fit properly into existing work.

3.2 PROTECTION

- A. Protect existing adjacent construction from damage during work performed in this section.

3.3 WORKMANSHIP

- A. Metal surfaces shall be clean and free from mill scale, flake rust and rust pitting; well formed and finished to shape and size, with sharp lines and angles and smooth surfaces. Shearing and punching shall leave clean true lines and surfaces. Weld or rivet permanent connections. Welds and flush rivets shall be finished flush and smooth on surfaces that will be exposed after installation. Do not use screws or bolts where they can be avoided; where used, heads shall be countersunk, screwed up tight and threads nicked to prevent loosening.
- B. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall give ample strength and stiffness. Joints exposed to weather shall be formed to exclude water. Provide holes and connections for the work of other Trades.
- C. At proper time, deliver and set in place items of metal work to be built into adjoining construction.

3.4 REPAIRS AND TOUCH UP/ADJUSTMENT

- A. After erection, the steel shall again be cleaned and all field bolts, welds, and any damaged or unpainted surfaces shall be spot painted with the same paint used for the shop coat. This stage of the work shall result in a uniform, complete prime coat on all steel, which shall then be in condition for application of further coats.

3.5 GROUTING

- A. Grout shall be mixed and prepared in strict accordance with the manufacturer's instructions.
- B. Hole to receive member shall provide at least 1/2 inch clearance around entire perimeter. Hold expanding grout back 1/2 inch from finish surface and fill void with Portland Cement Grout to match color and texture of adjacent surface.
- C. The entire bearing area under bearing plates or setting plates shall be grouted solid. Set bearing or setting plates level and to correct elevations.

3.6 CLEANING

- A. All items of work shall be thoroughly cleaned in a manner suitable for the work of trades to follow.
- B. All work adjacent to operations under this Section shall be inspected for damage and stains and repaired or cleaned prior to the completion of work.

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

SECTION 7512 —SINGLE-PLY ROOFING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Scope of the work shall include, but not be limited to, the furnishing and installing of the following:

1. Roof insulation and membrane roofing over all roof areas.
2. Fascia and joint sealants and trim.

1.02 SUBMITTALS

A. Shop Drawings

1. Shop Drawings, in accordance with General Requirements, showing the mounting application in detail shall be submitted to the Engineer for approval and any specific variations from the Plans and Specifications shall be brought to the attention of the Engineer. Shop Drawings shall detail ALL unique conditions that occur on this job under this Contractor's scope of work.
2. Prior to submittal of roofing shop drawings, Contractor shall obtain manufacturer's approval of all details

1.03 QUALITY ASSURANCE

- A. The requirements of the governing building codes establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified by the Contract Documents.
- B. The roofing and flashing system shall be applied only by a factory trained and approved roofing contractor familiar with the product and in strict compliance with the manufacturer's instructions.

- C. This Contractor shall be responsible for the acceptance of his company by the roofing system manufacturer and that the materials and workmanship provided by him are in accord with the manufacturer's specifications. Failure of the bidder to comply with the above provisions will not be allowed. The bidder shall submit evidence of acceptance to the Engineer before the contract has been awarded that he has complied with the above provisions and that at the completion of the work, the manufacture's warranty will be issued.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered in their original, unopened containers, clearly labeled with manufacturer's name, brand name and such identifying numbers as are appropriate. Adhesives shall be stored at temperatures above 40°F. Adhesives exposed to lower temperatures, shall be placed in a proper temperature environment for three to five days prior to use. Membrane rolls shall be stored lying down and fully protected from moisture. Do not use materials damaged in handling or storage. All cardboard containers shall be stored in DRY areas.

1.05 WARRANTY

A. Roofing

1. This Contractor shall furnish to the Owner the membrane roofing system manufacturer's standard no-dollar-limit 10-year warranty of watertightness plus an additional 5-year extended coverage warranty as part of this work, at no additional cost to the Owner.
2. The warranty shall cover both labor and materials necessary to effect watertightness, including that required to repair roof leaks caused by structural movement or standing water on the roof membrane, without limit as to the amount required to affect totally satisfactory roof repairs.
3. Contractor shall also furnish the Owner the system manufacturer's 15-year material warranty at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Roof Insulation

1. Roof insulation shall be insulation boards consisting of a reinforced polyisocyanurate foam with fiberglass facers with a "K" value of .14, Atlas Roofing Corp. ACFoam-Supreme, or Approved Equal

B. Sealant Pockets

1. Sealant pockets shall be formed from 16 oz. copper, 24 gauge stainless steel, or 0.032" anodized aluminum. Base on sealant pocket to be foamed-in-place with polyurethane insulation foam. Top of sealant pocket shall be at least 2" above base roof level. Use manufacturers' approved sealant pocket details.
2. Sealant for filling sealant pockets shall be roofing manufacturer's standard pourable sealant used for this purpose.

C. Membrane Roofing System

1. The roofing system for all areas shall be a mechanically-attached membrane roofing system and shall be furnished and installed as a part of this Section. Included shall be the furnishing and installing of treated wood blocking, membrane roofing and necessary accessories and all required fascia flashings and trim to provide a complete, moisture-tight and weather resistant roofing system for the facility. Rating shall be [I-90].
2. Roofing membrane shall be a 36 mil thick ethylene interpolymer (EIP) reinforced with weft-reinforced Dacron polyester knit fabric as manufactured by FiberTite Roofing Systems by Seaman Corporation, Flex Roofing, Duralast or Approved Equal. All necessary accessories for the proper application of the membrane roofing system shall be products manufactured by or furnished by the manufacturer of the roofing membrane, and shall include, but not be limited to cured reinforced EIP roofing, uncured EIP flashing, bonding adhesive, sheet metal and prefabricated accessories.
3. Sealants and Adhesives used for sealing of membranes to flashings and trim shall be the products of or recommended by the manufacturer of the particular membrane being utilized.

4. Trim Metal

- a. Metal flashings, fascia, and gravel stops used in conjunction with the roofing system shall be totally compatible with the roofing system utilized. In no case shall the metal thickness be less than 26 gauge, and in the absence of a specific requirement of the membrane manufacturer, trim metal shall be galvanized steel, painted with a baked-on acrylic paint of the same color as the wall surface to which it is attached or adjacent.
- b. Maximum length allowable for flashings, fascias, and gravel stops shall be eight feet. Fasteners shall be spaced a maximum of 6" o.c. Fascias shall be held in place at building exterior using a continuous cleat.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas and other contingent construction in or to which his work is to be installed and ensure himself that they are in proper condition to receive the work to be performed under this Section. The Contractor shall notify the Engineer in writing, before any work is installed, of any condition requiring correction. Failure to make such a report shall be construed as acceptance of the existing conditions and the responsibility to provide an acceptable installation.

3.02 INSTALLATION

A. Roof Insulation

1. Roof insulation shall be laid with the board long dimension perpendicular to the flutes of the metal roof deck. Insulation shall be mechanically attached to the deck in conformance with the manufacturer's requirements, and shall be protected from weather during construction.

B. Membrane Roofing

1. The membrane roofing system shall be installed by manufacturer-trained and approved roofers, familiar with the product. The details of installation shall be in strict accordance with the manufacturer-approved details submitted on the required Shop Drawings.

2. Care must be exercised to insure that water does not flow beneath any sections of completed roof. When the weather is threatening, or overnight, seal the loose edge of the membrane with the manufacturer's specified overnight sealant.
3. Inspection – An inspection shall be made by the manufacturer's representative in order to ascertain that the membrane has been properly installed.

3.03 QUALITY CONTROL

- A. The manufacturer of the roofing system shall provide a full-time representative to inspect the installation of the work as it progresses and at the completion of the work shall certify to the Engineer in writing, as to the conformance of the work with the manufacturer's recommendations and procedures.
- B. The representative shall also inspect and approve the substrates for roofing materials and accessories.
- C. All roof membrane seams shall be tested for continuity by running a screwdriver along joint after seam has cured has cooled. Periodic checking of cross section cuts at seams shall be made.

3.04 CLEANING

- A. During and upon completion of roofing and flashing operations, this Contractor shall inspect all surfaces to insure that all debris has been removed and that no materials remain that could damage the installation.
- B. All work adjacent to operations under this Section shall be inspected for damage and stains and repaired or cleaned prior to the completion of work.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SECTION 7900 - SEALANTS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work required under this Section shall include the furnishing of all labor, materials, tools, and equipment necessary to install sealants at locations as specified herein and/or detailed on the Drawings.

1.02 DESCRIPTION OF WORK

- A. Caulking sealant shall be applied around hollow metal and aluminum door frames and around all window frames.
- B. Caulking sealant shall be applied around all accessories or openings that mount in or penetrate walls.
- C. Caulking sealant shall be applied in all wall expansion and construction joints.
- D. Caulking sealant shall be applied at all lintels and other steel members.
- E. Caulking sealant shall be applied at all masonry and concrete wall corners where the joints are not completely sealed, particularly where walls meet perpendicular to one another.

1.03 SUBMITTALS

- A. Brochures: Complete manufacturers brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work and technical data, installation procedures and maintenance recommendations in order that a proper evaluation can be made of the materials, methods, assemblies and construction to be provided.

1.04 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product's and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. The Contractor under this Section shall verify site conditions to assure that the requirements in the storage of materials and installation procedures conform to the following:
1. Storage areas are maintained at temperatures recommended by the manufacturer of the materials.
 2. Conditions of installation relative to temperature and dust and dirt control are as recommended by the manufacturers of the materials.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Caulking sealant in storage, utility and stairway areas shall be one-part, non-sag, modified polyurethane sealant. Color of caulking to match adjacent materials. Sealant shall be Dynatrol I as manufactured by Pecora Corporation, or Approved Equal.
- B. Floor slab sealant for areas to be maintained at or above 68 degrees F shall be a self-leveling, pourable epoxy modified joint sealant, with a minimum Shore A hardness of 80 and a Shore D hardness of 50. Sealant shall be one of the following, or an approved equal:
1. Euclid "Euco 700"
 2. Master Builders "Masterfill 300"
 3. Metzger-McGuire "MM-80"

PART 3 - EXECUTION

3.01 PREPARATION

- A. All surfaces to receive sealant shall be thoroughly cleaned. All particles of dust and other foreign materials shall be brushed from the areas prior to application of sealant.**

3.02 INSTALLATION

- A. Caulking Sealant: Shall be installed at locations previously specified herein. Surface primer and/or joint backing shall be used where required for proper installation**

- B. Floor Slab Joint Sealant**

- 1. Sealant shall be installed in the joints flush and level with the floor slab. Protect joints from dirt and traffic until sealant is properly cured. Joints shall be thoroughly cleaned out by air blast prior to placing sealant.**

3.03 CLEANING

- A. During and upon completion of sealant application, this Contractor shall inspect all surfaces, to insure that all debris has been removed and that no materials remain that could damage the installation.**
- B. All work adjacent to operations under this Section shall be inspected for damage and stains and repaired or cleaned prior to the completion of work.**

DIVISION 8 - DOORS AND WINDOWS

SECTION 8100 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work required under this Section includes the furnishing of hollow metal doors and hollow metal frames as indicated on the Drawings.
- B. Related Work Specified Elsewhere
 - 1. Installation of Doors and Frames - Section 6200.
 - 2. Finish Hardware - Section 8700.
 - 3. Painting - Section 9900.
 - 4. Masonry Partitions - Section 4200.

1.02 SUBMITTALS

A. Shop Drawings

- 1. This Contractor shall prepare and submit complete shop drawings to the Engineer for approval prior to fabrication.
- 2. The Drawings shall show all anchorage, provision for hardware and butts, and other items as required or specified in order that a proper evaluation can be made of the materials and construction to be provided.
- 3. Reference is made to the schedules incorporated in the drawings for the designation of door and frame types and their locations.
- 4. Shop drawings shall be approved before fabrication is commenced.

B. Brochures

- I. Complete manufacturer's brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work in order that a proper evaluation can be made of materials, methods, assemblies and construction to be provided.

1.03 QUALITY ASSURANCE

- A. The requirements of all governing building codes establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified by the Contract Documents.
- B. Where noted, all doors and frames of this Section shall comply with the State requirements for fire ratings for their pertinent locations, and shall bear the required Fire Underwriters' label. All frames for doors required by the Drawings to be labeled shall also bear the same label.

1.04 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product's and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.
- B. Doors and frames shall be packed in such a manner as to insure against damage during shipment.
- C. Frames shall be provided with spreaders and tied to prevent movement which would effect welded joints.
- D. Doors shall be completely cartoned.
- E. On cartoned items markings shall be provided on the packaging as well as the individual items.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Metal doors and frames shall be as manufactured by Steelcraft, Republic, or Approved Equal. Doors and frames shall be from the same manufacturer.**
- B. For the purpose of setting a standard of quality, all products herein are as manufactured by Republic.**

2.02 MATERIALS

A. Hollow Metal Doors

- 1. Doors shall be full flush, seamless and constructed of two face sheets of 16 gauge cold rolled steel. Each door edge shall have vertical channels of 12 gauge steel extending the full height, with integral hinge and lock mortises. Face sheets shall be welded to edge channels with edges finished so that joint is smooth and invisible. Doors shall have 16 gauge top and bottom channels welded to door skins. Doors shall be furnished with heavy gauge closer reinforcement. Heavy gauge lock reinforcement shall be provided, and doors shall be prepared for either ANSI A115.1 or A115.2 lock fronts (see Finish Hardware for requirements). Standard hinge mortising shall be 4-1/2" x 4-1/2" template butt hinges. Doors, as scheduled, shall be constructed to receive glazing and shall be furnished with glazing molding. Louvers shall be as noted.**
- 2. Doors shall be phosphatized inside and out, and receive a baked-on factory coat of prime paint.**
- 3. Uninsulated standard doors and fire doors shall have a core constructed of impregnated kraft honeycomb.**
- 4. Insulated standard doors shall have a core constructed of urethane insulation with a maximum U-factor of 0.14.**
- 5. Insulated fire doors shall have a core constructed of fiberboard or mineral core with a maximum U-factor of 0.29.**

6. Hollow metal fire doors, as scheduled, shall be manufactured in strict accordance with the Specifications and procedures of Underwriters' Laboratories, Inc., for the proper label classification.
7. All exterior doors shall be insulated.
8. All doors shall be 1-3/4" DE Series as manufactured by Republic.

B. Hollow Metal Frames

1. Frames shall be flush and constructed of 14 gauge cold rolled steel. Jamb face shall be 2" and head shall be 2" unless scheduled for 4" head. Frame depths shall be as noted on the Drawings. Frames shall be prepared for 4-1/2" x 4-1/2" standard template butts and shall include 8 gauge hinge reinforcement. Closer reinforcement shall be required. Preparation shall be made for ANSI A115.1 Universal strike. A minimum of six wall anchors and two base anchors of manufacturer's standard design shall be provided and installed. Frames shall be furnished with factory installed rubber mutes, three per strike jamb and two per head on double swing frames. Frames for masonry openings shall be set-up welded and shipped with space bar. Welds shall be ground smooth. Frames for fire doors shall have approval from Underwriters' Laboratories.
2. Frames shall be phosphate coated on both sides and painted with a baked-on primer.
3. Hollow metal window frames shall be set-up, face welded and ground smooth. Galvanized wall anchors shall be provided and installed. Frames shall be furnished with glazing molding. Jamb and head faces shall be 2" with hinge depths as called for on the Drawings.
4. Exterior frames shall be galvanized after fabrication in accordance with ASTM Designation; A386, Zinc Coating (hot-dip) on assembled steel products, and then given a chemical pretreatment before the prime coat is applied.
5. Frames shall be FE Series as manufactured by Republic, or Approved Equal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Frames shall be set plumb and true in locations shown on the Drawings. Frames shall be backfilled with mortar where set in masonry, unless otherwise noted.**

3.02 AJUSTMENTS

- A. The Contractor shall make any door service adjustments or guarantee replacements for one full year without any cost to the Owner.**

DIVISION 8 - DOORS AND WINDOWS

SECTION 8300 - SPECIAL DOORS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work in this Section consists of the furnishing and installation of doors of a special nature other than hollow metal doors. The types are as follows, but not limited thereto:

1. Aluminum Entry Doors.

1.02 SUBMITTALS

A. Shop Drawings

1. This Contractor shall prepare and submit complete shop drawings for approval prior to fabrication.
2. The Drawings shall show all anchorage, components and other items as required or specified in order that a proper evaluation can be made of the materials and construction to be provided.

B. Brochures

1. Complete manufacturer's brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work in order that a proper evaluation can be made of the materials, methods, assemblies and construction to be provided.

1.03 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product's and manufacturer's name.

Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

1.04 GUARANTEES

- A. The Contractor shall make any door service adjustments or guarantee replacements for one full year without any cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aluminum Entry Doors.

- 1. Door system shall be Kawneer Insulclad 360 with 1" thick double glazing, or approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas and other contingent construction in or to which his work is to be installed and insure himself that they are in proper condition to receive the work to be performed under this Section. The Contractor shall notify the Engineer in writing, before any work is installed, of any condition requiring correction. Failure to make such a report shall be construed as acceptance of the existing conditions and the responsibility to provide an acceptable installation.

3.02 INSTALLATION

- A. Doors shall be installed in accordance with the details shown on the Drawings, and in accordance with approved manufacturer's recommendations.
- B. Tracks shall be supported from walls or structure as approved by the Engineer. All struts required to support the weight of the door or to laterally stabilize the tracks shall be provided and installed.

- C. Doors shall be set square and plumb. Adjustments shall be made so doors have a tight seal on all four edges when closed. Springs or counterweights shall be adjusted so that door operation is smooth and operates with ease.
- D. Doors shall be installed by factory qualified and authorized personnel in strict accordance with the manufacturer's recommendations.

3.03 ADJUSTING

- A. Upon completion of the installation, the doors shall be tested and adjusted as necessary to assure proper operation.

3.04 CLEANING

- A. All work adjacent to operations under this Section shall be inspected for damage and stains and repaired or cleaned prior to the completion of work.

DIVISION 8 - DOORS AND WINDOWS

SECTION 8700 - FINISH HARDWARE

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work required under this Section includes the furnishing of all materials necessary to complete the hardware installation.
- B. Related Work Specified Elsewhere
 - 1. Installation of Hardware in doors - Under Section 6200.
 - 2. Hollow Metal Doors and Frames - Under Section 8100.

1.02 SUBMITTALS

- A. Schedule: The Contractor shall submit to the Engineer, for approval, detailed finish hardware schedules. The schedule shall also indicate the proposed keying layout.
- B. Brochures: Complete manufacturer's brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work.
- C. Templates: Hardware templates shall be furnished for distribution to all trades or suppliers affected within ten (10) days after receipt of the approved hardware schedule.

1.03 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product's and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

- B. Each item shall be packed separately, complete with all attaching devices, instructions for installation and clearly itemized.
- C. All items shall be marked with the heading and door number in conformance with the approved hardware schedule.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Hardware shall be free from imperfections in manufacture and finish. Qualities, weights, and sizes specified are minimum acceptable.
- B. Hardware manufacturers shall be as listed in (E), but an Approved Equal may be substituted for any of the specified manufacturers if the conditions listed under "Submittals" are followed.
- C. All hardware to have satin stainless steel finish. (US32D)
- D. All locks shall be master keyed, and shall match existing master key system.
- E. The following should be used as a standard of quality:
 - 1. Butts shall be TA2714, 4-1/2" x 4-1/2" as manufactured by McKinney, or Approved Equal. Provide 1-1/2 pair per leaf unless noted otherwise.
 - 2. Locksets shall be heavy-duty, Sargent 8237 LNL with 26D finish, with cylinders to match the existing locksets, with function as listed on the hardware set.
 - 3. Push plates shall be KP-.050, 3-1/2" x 15", as manufactured by Rockwood, or Approved Equal.
 - 4. Pull plates shall be KP-.050, 3-1/2" x 15", as manufactured by Rockwood, or Approved Equal.
 - 5. Kick plates shall be KP-.050, 8" high x 34", as manufactured by Rockwood, or Approved Equal.

6. Exit devices shall be 700 Series rim-type as manufactured by Russwin, or Approved Equal. Device shall have exterior thumbpiece (No. 736) or no exterior hardware (No. 736-1/4) and/or UL listing (F suffix) as called for on the hardware set or door schedule.
7. Vertical rod exit device shall be No. 8827 surface-type as manufactured by VonDuprin, Inc., or Approved Equal. Device shall have exterior thumbpiece and/or UL listing (F suffix) as called for on the hardware set or door schedule.
8. Flush bolts shall be No. 555 heavy-duty surface bolts as manufactured by Sargent, or Approved Equal.
9. Dust-proof strikes shall be No. 489 with Plate No. 487 as manufactured by Ives, or Approved Equal.
10. Door closers shall be 4110281 P9 as manufactured by Sargent, or Approved Equal. Closer shall be with hold-open or without hold-open and/or UL listing as called for on the hardware set or door schedule.
11. Door stops shall be No. 441 floor stops as manufactured by Ives, or Approved Equal.
12. Thresholds shall be 171AFG extruded aluminum as manufactured by Pemko, or Approved Equal.
13. Weatherstripping shall be 303A5 extruded aluminum with silicon seal as manufactured by Pemko, or Approved Equal.
14. Push-pull latch sets shall be No. H10 and H010 as manufactured by Russwin, or Approved Equal.
15. Sliding door track with valance shall be Class No. 2858, aluminum, as manufactured by Stanley, or Approved Equal with two pair 2850-3 Hangers, T-2854-71" Track, and 2862 floor guide. Sliding door flush pulls shall be Stanley CD2914, chromium finish, or Approved Equal.
16. Removable fire-rated Center Mullion shall be 1568 as manufactured by Russwin, or Approved Equal.

F. Hardware Functions

1. Hardware Set 1 (Exterior Aluminum Doors)

Hardware by door supplier. Key cylinder, supplied by door manufacturer, to master key system.

2. Hardware Set 2 (Exterior Pass Door)

- (1-1/2) Pair Butts
- (1) Exit Device With Thumbpiece (736)
- (1) Closer With Hold-Open
- (1) Kick Plate
- (1) Threshold
- (1) Set Weatherstripping

3. Hardware Set 3 (Exterior Pass Door - Exit Only)

- (1-1/2) Pair Butts
- (1) Exit Device (736-1/4)
- (1) Closer With Hold-Open
- (1) Kick Plate
- (1) Threshold
- (1) Set Weatherstripping

4. Hardware Set 4 (Exterior Pair Doors)

- (3) Pair Butts
- (1) Vertical Rod Exit Device
- (2) Closer With Hold-Open
- (1) Pair Flush Bolts
- (1) Threshold
- (2) Set Weatherstripping
- (1) Metal Astragal (Inactive Leaf)

5. Hardware Set 5 (Interior Passage and Closet Doors)

- (1-1/2) Pair Butts
 - (1) Lockset Function No. 93KON15C-STK-626
 - (1) Door Stop

- 6. Hardware Set 6 (Privacy and Bathroom Doors)
 - (1-1/2) Pair Butts
 - (1) Lockset Function No. 93KOL15C-STK-626
 - (1) Door Stop

- 7. Hardware Set 7 (Lockable Office Doors)
 - (1-1/2) Pair Butts
 - (1) Lockset Function No. 93KOAB15C-STK-626, Keyed to Master
 - (1) Door Stop

- 8. Hardware Set 8 (Lockable Closet Doors)
 - (1-1/2) Pair Butts
 - (1) Lockset Function No. 93KOD15C-STK-626, Keyed to Master

- 9. Hardware Set 9 (Lunchrooms, Locker Rooms, Etc.)
 - (1-1/2) Pair Butts
 - (1) Push Plate
 - (1) Pull Plate
 - (1) Kick Plate
 - (1) Closer (No Hold-Open)

- 10. Hardware Set 10 (Interior Pair Closet Doors)
 - (3) Pair Butts
 - (1) Pair Flush Bolts
 - (1) Dustproof Strike
 - (1) Lockset No. 93KON15C-STK-626

- 11. Hardware Set 11 (Interior Pair Privacy Doors)
 - (3) Pair Butts

- (1) **Pair Flush Bolts**
- (1) **Dustproof Strike**
- (1) **Lockset No. 93KOL15C-STK-626**
- (1) **Door Stop**

12. Hardware Set 12 (Interior Pair Lockable Doors)

- (3) **Pair Butts**
- (1) **Pair Flush Bolts**
- (1) **Dustproof Strike**
- (1) **Lockset No. 93KOAB15C-STK-626, Keyed to Master**
- (1) **Door Stop**

13. Hardware Set 13 (Interior Pair Lockable Closet Doors)

- (3) **Pair Butts**
- (1) **Pair Flush Bolts**
- (1) **Dustproof Strike**
- (1) **Lockset No. 93KOD15C-STK-626, Keyed to Master**

14. Hardware Set 14 (Interior Pair, Lunchroom, Locker Room Doors)

- (3) **Pair Butts**
- (1) **Pair Push Plates**
- (1) **Pair Pull Plates**
- (1) **Pair Kick Plates**
- (1) **Pair Closers (No Hold-Open)**

15. Hardware Set 15 (Exit Door To Stairs)

- (1-1/2) **Pair Butts**
- (1) **Exit Device With Thumbpiece (736)**
- (1) **Closer (No Hold-Open)**
- (1) **Kick Plate**
- (All U.L. Rated)

16. Hardware Set 16 (Pair Exit Doors to Stairs)

- (3) Pair Butts
- (1) Exit Device With Thumbpiece (736)
- (1) Vertical Rod Exit Device With Thumbpiece
- (1) Dustproof Strike
- (1) Pair Closers (No Hold-Open)
- (1) Pair Kick Plates
- (1) Metal Astragal (Inactive Leaf)
- (All U.L. Rated)

17. Hardware Set 17 (Fire Rated Passage Door)

- (1-1/2) Pair Butts
- (1) Lockset Function No. 93KON15C-STK-626
- (1) Closer (No Hold-Open)
- (All U.L. Listed)

18. Hardware Set 18 (Fire Rated Privacy Door)

- (1-1/2) Pair Butts
- (1) Lockset Function No. 93KOL15C-STK-626
- (1) Closer (No Hold-Open)
- (All U.L. Listed)

19. Hardware Set 19 (Fire-Rated Push-Pull Door)

- (1-1/2) Pair Butts
- (1) Set Push-Pull Latch
- (1) Closer (No Hold-Open)
- (All U.L. Listed)

20. Hardware Set 20 (Interior Pair Removable Mullion)

- (3) Pair Butts
- (1) Removable Center Mullion
- (2) Fire Exit Rim Devices
- (2) Kick Plates
- (All U.L. Listed)

21. Hardware Set 21 (Pair Bi-Passing Doors)
- (1) Sliding Door Track with Valance
 - (1) Set Hanger/Roller Hardware for Two Bi-Passing Doors
 - (1) Floor Guide
 - (2) Sliding Door Flush Pulls

G. Master Keys:

1. All keys to be under a master key system, and shall match the Owner's present master key system.
2. Provide two submaster keys to open doors as scheduled by the Owner.
3. Furnish three (3) keys for each lock and six (6) keys for each master and submaster key.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. All hardware shall be applied and installed in accordance with best Trade practice. Care shall be exercised not to mar or damage hardware or adjacent work. Damaged work shall be repaired or replaced.
- B. Thresholds shall be set in mastic.

DIVISION 9 - FINISHES

SECTION 9300 - CERAMIC TILE

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. General

1. Work required under this Section shall include the furnishing of all materials, labor, tools, equipment, and supervision necessary for a complete installation of ceramic tile walls, flooring and base trim and quarry tile at locations as called for on the Drawings.

B. Related Work Specified Elsewhere

1. Drywall Partitions - Under Section 9250.

1.02 SUBMITTALS

A. Brochures

1. Complete manufacturers brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work in order that a proper evaluation can be made of the materials, methods, assemblies and construction to be provided.
2. The submittals shall also include specifications of the various types of adhesives and setting beds to be used in the work.

- B. Samples:** This Contractor shall prepare and submit to the Engineer for approval samples of each type of tile, trim pieces and accessories, showing color, size, finish and general characteristics. This shall include a complete set of pattern samples of the flooring and wall materials for color selection by the Owner.

1.03 QUALITY ASSURANCE

- A. The requirements of all governing building codes established the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified by the Contract Documents.
- B. All tile work shall conform to the Handbook for Ceramic Tile Installation, latest edition of the Tile Council of America (TCA), insofar as is applicable. Certification of quality shall be submitted for all materials.

1.04 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

1.05 PROJECT CONDITIONS

- A. The Contractor under this Section shall verify site conditions to assure that the requirements in the storage of materials and installation procedures conform to the following:
 - 1. Areas where organic type adhesives or sealers are employed in the work shall be well ventilated so as to insure safe working conditions for personnel.
 - 2. Suitable fire extinguishers shall be provided in areas where flammable materials are employed in the work.

1.06 MAINTENANCE

- A. For the purpose of future repair and maintenance work, the Contractor under this Section shall deliver to the Owner's Representative the following:
 - 1. Two percent (2%) minimum of each type of tile and trim provided under this Section.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Ceramic Tile

1. Ceramic floor tile shall consist of 12" X 12", natural clay, glazed. Tile shall be impervious, with less than 1/2 of 1% absorption, stainproof and dentproof. Color and pattern to be of manufacturer's stock patterns.
2. Ceramic floor tile shall be Castle Gate as manufactured by Interceramic, USA, or Approved Equal.

B. Setting Materials and Adhesives

1. Setting materials shall be a Polymer-modified mortar, Laticrete 1000 white, or approved equal.

C. Grouting Materials

1. Grout for ceramic tile walls shall be a Polymer-modified grout, Laticrete Snow White, or approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas and other contingent construction in or two which his work is to be installed and assure himself that they are in proper condition to receive the work to be performed under this Section. The Contractor shall notify the Engineer in writing, before any work is installed, of any condition requiring correction. Failure to make such a report shall be construed as acceptance of the existing conditions and the responsibility to provide a acceptable installation.
- B. Particular attention shall be given to excessive dampness, irregularities, loose substrates and oily or waxy areas which would inhibit adhesion.
- C. This Contractor shall also verify, that all grounds, anchors, bucks, mechanical, electrical and all other work adjacent to or behind tile areas has been installed, inspected and

approved.

3.02 PREPARATION

A. Floor areas shall be thoroughly cleaned before the work proceeds.

3.03 INSTALLATION

A. Ceramic Floor Tile

1. Set tile in full bed of mortar to insure good contact with close, even joints. Lay tile square with room. After proper set, tile shall be grouted and cleaned.
2. Contractor shall replace any damaged material before acceptance.

B. Setting Material

1. Adhesive shall be spread with a notched trowel of the type recommended by the manufacturer. The setting compound shall be of such consistency that ridges formed by the trowel shall not flow or slump. Surfaces shall be uniformly covered without bare spots. Apply setting compound only to as much area as can be covered with tile before adhesive films. Remove filmed-over adhesive and apply new materials.

C. Grout

1. Grout shall be installed as recommended by the manufacturer for the type used and conditions of installation.
2. Joint spacers shall be removed and the grout forced into the joints to assure that no cavities remain. Joints for cushion-edged tile shall be cleaned to the depth of the cushion. Joints for square edge tile shall be flush with the tile surface. Mortar shall not be permitted to show through grouted joints. Finished joints shall be uniform in color, smooth and without voids, pinholes or low spots.

3.04 CLEANING AND POLISHING

A. No sooner than ten days after the curing period has been completed, the tile shall be thoroughly cleaned with water and a mild detergent.

- B. If necessary, a proprietary acidic cleaner may be used following the manufacturer's suggested dilution formulas for the different types of cleaning. Apply solutions to test patches before final cleaning and protect metal and enameled iron. Pre-wet the area to be cleaned. Apply solution with scrub brushes, allow to stand, then remove with mop or squeegee. If some areas remain dirty, repeat process and scrub with heavy-duty floor brush. Thoroughly rinse the entire area immediately with clear water.**
- C. Finally, cleaned surfaces shall be polished with a soft cloth.**

3.05 PROTECTION

- A. All work adjacent to operations under this Section shall be inspected for damage and stains, and repaired or cleaned prior to the completion of work.**

DIVISION 9 - FINISHES

SECTION 9510 - ACOUSTICAL CEILING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work required under this Section shall include the furnishing of all labor, materials, tools, equipment, and supervision necessary for a complete installation of suspended acoustical panel ceiling at locations as called for on the Drawings.
- B. Acoustical ceiling systems required to be removed for the work of other Sections shall be taken down, salvaged and reinstalled under the work of this Section. Items damaged during removal shall be replaced with new materials and panels or tiles shall be replaced in their entirety when replacement materials cause an unacceptable artistic effect as determined by the Engineer.

1.02 SUBMITTALS

- A. Brochures: Complete manufacturers brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work in order that a proper evaluation can be made of the materials, methods, assemblies and construction to be provided.

1.03 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product's and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

1.04 MAINTENANCE

- A. Contractor shall supply ten (10) extra ceiling panels of each type after installation is complete.

1.05 PROJECT CONDITIONS

- A. The Contractor under this Section shall verify site conditions to assure that the requirements in the storage of materials and installation procedures conform to the following:
 - 1. Temperatures in spaces where acoustical ceilings are to installed shall be maintained between 55° and 70°F for not less than 24 hours before installation and continuously thereafter until the work has been accepted by the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lay-in Ceiling Panels

- 1. Acoustical lay-in panels in lunchroom and corridors shall be 24" x 48" x 5/8", Cirrus Tile and Lay-in Panels, as manufactured by Armstrong World Industries, Inc., Lancaster, PA, or Approved Equal.
- 2. Panels shall have a factory applied washable, vinyl latex paint finish. Light reflectance shall be 75% or greater. Flame rating shall be Class 25 when tested according to ASTM E84. Color shall be as selected by the Owner. U.L. rating shall be provided where Drawings indicate 1 hour rating required.
- 3. All ceilings shall receive 6" fiberglass batt insulation on top of the acoustical lay-in ceiling,

B. Suspension System

- 1. Suspension system shall be Prelude white exposed grid as manufactured by Armstrong World Industries, or Approved Equal.
- 2. All suspension parts shall be electro-galvanized and bonderized. All surfaces shall then receive a baked vinyl finish coat. The suspension system shall be of sufficient

strength and rigidity to carry acoustical units and recessed light fixtures in true and level plane without exceeding deflection of 1/360th of its span. Runners shall be double web, 1-1/2" high with 15/16" capped face.

3. Panel hold-down clips and other accessories shall be provided at ceilings identified on the Drawings to receive fire-rated assemblies.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas and other contingent construction in or to which his work is to be installed and insure himself that they are in proper condition to receive the work to be performed under this Section. The Contractor shall notify the Engineer in writing, before any work is installed, of any condition requiring correction. Failure to make such a report shall be construed as acceptance of the existing conditions and the responsibility to provide an acceptable installation.
- B. Particular attention shall be given to the presence of leaks, dampness and other conditions which could adversely affect the installation.

3.02 INSTALLATION

- A. Unless otherwise indicated on the drawings, the system shall be laid-out symmetrically with relation to the centerlines of the rooms and columns, where applicable. Irregular positioning of acoustical units shall be adjusted as directed by the Engineer.
- B. Acoustical Panel Suspension System
 1. Hanger wires shall be installed as recommended by the manufacturer of the system, generally spaced a maximum of 4 feet on center in each direction with additional hangers at the ends of each suspension member 6-inches from adjacent vertical surfaces. Wires shall not be splayed more than 5-inches in a 4 foot vertical drop. Ends shall be wrapped a minimum of three times horizontally and turned upward. Hanger wires shall be attached to the structural system by the use of powder-actuated eyepins, drilled-in inserts or other mechanical type fasteners and shall not be attached to piping, duct work, conduit or other systems unless so specifically noted on the Drawings.

- 2. Main and cross runners shall be installed perfectly level and perpendicular to walls.**
- 3. Wall moldings shall be installed at the intersection of the ceiling system with vertical surfaces in as long lengths as possible. Corners where wall moldings intersect shall be mitered or provided with corner caps.**
- 4. The installation of the suspension system shall comply with ASTM C636 in all respects and the finished installation shall be level to within 1/8 inch in 12 feet.**
- 5. Reinforce suspension system for lighting fixtures.**
- 6. Where installed in Seismic Zones 2, 3, or 4, suspension system shall be installed in accordance with Uniform Building Code Standard No. 47-18.**

C. Acoustic Panels

- 1. Panels shall be installed in strict accordance with the manufacturers instructions, in such a manner as to avoid soiling or damage of any nature and shall bear fully on the suspension system.**

3.03 PROTECTION

- A. All work adjacent to operations under this Section shall be inspected for damage and stains, and repaired or cleaned prior to the completion of work.**

DIVISION 9 - FINISHES

SECTION 9650 - RESILIENT FLOORING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work required under this Section shall include the furnishing of all materials, labor, tools, and equipment necessary for a complete installation of vinyl composition floor tile and vinyl base as called for on the Drawings.**
- B. Related Work by This Contractor Specified Elsewhere.**

1.02 SUBMITTALS

A. Brochures

- 1. Complete manufacturers brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work and technical data, installation procedures and maintenance recommendations in order that a proper evaluation can be made of the materials, methods, assemblies and construction to be provided.**
- 2. The submittal shall also include specifications of the various types of adhesives to be used in the work.**

B. Samples

- 1. Samples of the following items shall be submitted:**
 - a. Flooring.**
 - b. Base.**
 - c. Accessories.**

- d. Color and pattern charts for Owner selection.

1.03 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product's and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

1.04 PROJECT CONDITIONS

- A. The Contractor under this Section shall verify site conditions to assure that the requirements in the storage of materials and installation procedures conform to the following:
 - 1. Material shall be stored at the site for not less than 24 hours in an area where a temperature of at least 70°F will be maintained immediately prior to installation.
 - 2. Temperatures in spaces to receive floor covering materials shall be maintained between 70 and 90°F for not less than 24 hours before and 72 hours after the installation.
 - 3. Temperatures in spaces where the work has been completed shall be maintained at not less than 55°F until the work is accepted by the Owner.

1.05 MAINTENANCE

- A. Upon completion of the work, the Contractor shall deliver to the Owner's representative, 10 pieces (full size units of new tile) of each color or pattern used for this project.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Flooring shall be as manufactured by Armstrong World Industries, Tarkett, Mipolam, VPI, or Approved Equal.

- B. For the purpose of establishing a standard of quality, the materials or assemblies hereinafter referred to are as manufactured by Armstrong World Industries, except as otherwise noted.

2.02 MATERIALS

A. Vinyl Composition Floor Tile

- 1. Vinyl tile shall be 12" x 12" x 1/8" thick and shall be Excelon Tile, Imperial Series.

B. Slip-resistant Vinyl Composition Floor Tile

- 1. Vinyl tile shall be 12" x 12" x 1/8" thick and shall be Safety Zone.

C. Vinyl Base

- 1. Vinyl cove base for use with resilient flooring shall be 4" high x .080" gauge. The base shall be turned at internal and external corners in lieu of using preformed corners.

C. Adhesives

- 1. Adhesive shall be Armstrong S-230, or approved equal, for moist or wet applications.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas and other contingent construction in or to which his work is to be installed and insure himself that they are in proper condition to receive the work to be performed under this Section. The Contractor shall notify the Engineer in writing, before any work is installed, of any condition requiring correction. Failure to make such a report shall be construed as acceptance of the existing conditions and the responsibility to provide an acceptable installation.

3.02 PREPARATION

- A. Newly installed concrete shall have been allowed to cure a minimum of 30 days before the installation of flooring.
- B. Surfaces shall be cleaned of all deleterious materials and be perfectly clean prior to the start of installation.
- C. Prior to the applications of primer the surface shall be tested for adhesion by the application of a 3 foot by 3 foot test patch of primer which shall, after being in place for 24 hours, resist being scraped or peeled from the surface. If the surface fails the test, further cleaning or additional curing and drying shall be required and the test then be applied in accordance with the manufacturer's recommendations.

3.03 INSTALLATION

A. Adhesives

1. Adhesives shall be mixed and applied in accordance with the manufacturer's instructions, observing proper safety precautions.
2. Adhesives shall be applied in a uniform film with a steel trowel with proper size notches for correct coverage. Avoid applying excess quantities to prevent adhesives from bleeding through joints. Apply adhesives only in areas which can be covered within the recommended working time. Remove any adhesives which dry or film over. Avoid soiling adjacent walls and floors with adhesives. Promptly remove any spillage. Allow adhesive to cure to a tacky finish before applying sheet vinyl flooring or base.

B. Flooring

1. Flooring shall be laid square with room axis, and to insure uniform contact with close, even tight joints, with all finished surfaces smooth and in a true plane, free from buckles, waves or other imperfections, with border width varying slightly to maintain full size tiles in the field.
2. Flooring shall be carried neatly into breaks and recesses. Cut flooring neatly and accurately to fit snugly against pipes and other vertical surfaces. Seal joints at pipes with adhesives.

3. Integral bases shall be neatly formed using coved filler strips at the junction of the wall and floor to assure a smooth transition.
 4. Joints at floor seams of sheet vinyl flooring shall be welded using the manufacturer's color matched PVC or other thread as recommended by the manufacturer for the conditions of installation.
 5. Provide beveled edge strips where tile edges are exposed.
- C. Vinyl Base: Base shall be cut to accurate lengths with a minimum number of joints. The maximum joint width shall be 1/64 inch. Base shall be scribed accurately to abutting materials and pressed firmly against the wall to assure a secure bond.
- D. Treads and Landings
1. Treads shall be neatly trimmed and fitted and applied using the adhesive recommended by the manufacturer for the conditions of installation.
 2. Landing tiles or sheets, as applicable, shall be installed so as to continue the pattern of the tread at that level. Tiles shall be trimmed so as to provide edge sections not less than 6 inches in width.

3.04 CLEANING AND POLISHING

- A. Cleaning shall commence no sooner than five days after installation of the flooring has been completed and in accordance with the following procedure:
1. Floors shall be dry mopped, and all edges and corners thoroughly cleaned.
 2. Floors shall then be machine washed using a neutral cleaner. "Strippers" shall not be used on floors.
- B. Two (2) coats of wax shall be applied in accordance with the manufacturer's instructions allowing each coat to dry two hours before continuing. The floors shall then be buffed to a high gloss.

3.05 PROTECTION

- A. Floors shall be covered with sheet plastic or non-staining building paper for protection. Heavy traffic shall be kept off floors for at least eight days.**

- B. All work adjacent to operations under this Section shall be inspected for damage and stains and repaired or cleaned prior to the completion of work.**

DIVISION 9 - FINISHES

SECTION 9900 - PAINTING

PART 1 - GENERAL

1.01 SCOPE

- A. Work required under this Section shall include the furnishing of all materials, labor, tools and equipment to prepare and paint all interior and exterior surfaces as specified herein or as called for on the Drawings.

1.02 SUBMITTALS

- A. Brochures: Complete manufacturers brochures shall be submitted. Brochures shall be marked up to indicate all products to be employed in the work in order that a proper evaluation can be made of the materials, methods, assemblies and construction to be provided.
- B. Samples: Upon approval, the Contractor shall furnish color charts of the approved paint for owner's selection. When requested, he shall prepare samples of various finishes for approval.
- C. Mockups: A field sample on a section of wall or hardboard panel shall be prepared for each type and color of finish specified. Make samples not less than 10 square feet for brush work, 100 square feet for spray painting. The Engineer reserves the right to require two additional samples of each type. The Contractor shall request a review by Engineer on first completed room, color scheme, special items, etc., which shall serve as project standard after approval.

1.03 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the product's and manufacturer's name.

Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

- B. All materials of this Section shall be stored in spaces provided and designated by the Construction Manager in a manner to meet the requirements of the pertinent codes and fire regulations. When not in use, such spaces shall be kept under lock and inaccessible to those not employed under this Section. Each space shall be provided with a two and one-half gallon fire extinguisher bearing the label of the National Board of Fire Underwriters.

1.04 PROJECT REQUIREMENTS

- A. The Contractor under this Section shall verify site conditions to assure that the requirements for installation procedures conform to the following:

1. Temperature in spaces to receive painter's finish shall be maintained at not less than 50°F during installation.
2. Adequate ventilation shall be maintained for the drying of paint and the prevention of condensation and mildew.
3. Do not apply finish in areas in which dust is being generated.

- B. Exterior work shall be performed only when temperatures are above 40°F except that work shall not be undertaken when combinations of environmental conditions would cause the paint to dry too rapidly. Exterior painting shall not commence when rain is forecast within 12 hours.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Unless noted otherwise, all paint as specified herein shall be as manufactured by the Sherwin-Williams Company, or Approved Equal. Color selection will be by the Owner.

2.02 MATERIALS

A. Paint

1. Masonry:

a. Heavy Duty Interior: Primer Coat - "Heavy Duty Block filler" B42-W46 Series; finish coat- "Tile Clad High Solids Epoxy, B62-Z100 Series".

b. Normal Duty Interior: Primer Coat: "PrepRite Block Filler" B25-W25 Series"; finish coat - "Acrylic Latex Semigloss", B31-W200 Series.

c. Exterior: Primer Coat: "PrepRite Block Filler", B25-W25 Series; Finish Coat - "Super Paint" Satin, A89 Series.

2. Hollow Metal Doors and Frames: Primer coat (shop plus field spot) - "Kem Kromic" Universal Metal Primer B51 Series; finish coat - Pro Classic Water Borne" B31-W21 Series.

3. Structural Steel and Misc. Metals: Primer coat (shop plus field spot) - gray Tnemic primer; finish coat, "Metaltex Semi-Gloss Enamel" B42 Series.

B. Materials for general use, mixing, and tinting shall be as follows:

1. Raw linseed oil shall conform to the Standard Specifications of the ASTM C-234; current edition.

2. Boiled linseed oil shall conform to the Standard Specifications of the ASTM D-260; current edition.

3. Turpentine shall conform to the Standard Specifications of the ASTM D-13; current edition, for pure gum spirits distilled.

4. Colors shall be pure, non-fading pigments, finely ground in linseed oil.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. This Contractor shall inspect all surfaces, areas and other contingent construction in or to which his work is to be installed and insure himself that they are in proper condition to receive the work to be performed under this Section.

3.02 PREPARATION OF SURFACES/PROTECTION

- A. All surfaces to be treated shall be clean and dry, and no painting shall be done in wet or freezing weather. Metal surfaces shall be wire brushed, removing all rust scale, and shall be thoroughly sanded clean and touched up to match the priming coat. In addition to the foregoing, all surfaces shall be prepared in strict accordance with the recommendations of the manufacturer of the material to be applied. New galvanized steel will receive a phosphate chemical wash.
- B. All existing exterior walls shall receive a high pressure detergent wash.
- C. Protect finished surfaces and equipment not being painted with masking tape, canvas dropcloth, polyethylene sheets or other suitable means as approved by the Owner. Items such as lighting switch covers, fixture canopies and door handles may be temporarily removed, carefully stored and replaced after painting instead of being covered.

3.03 INSTALLATION

- A. The work of this Section shall be coordinated with that of associated trades.
- B. The Contractor shall be fully responsible for the proper execution and performance of the work described herein.
- C. It is the intent of this contract that all surfaces to be exposed in the final work, except pre-finished and other items, materials, and surfaces not specifically indicated or specified to be left unfinished, shall be painted. This Contractor shall refer to all other Sections of these Specifications for items to be primed, shop coated, or finished as part of the work of said Sections.

3.04 APPLICATION

- A. Paint and finishing materials shall be free from skins, lumps, or any foreign matter when used, and pigment fillers and other materials shall be evenly worked out and allowed to

dry before subsequent coats are applied, and each coat of paint shall be a different tone from the preceding, when required for identification. Finishing coat or coats shall be the exact shade texture approved on the job and from samples submitted. Finished work shall be free from runs and sags, defective brushing, and clogging of angles. Where required or necessary, bare or abraded spots in shop coat shall be touched up by this Contractor before applying final coats, using the same material as used in the shop coat, or other material when approved by the Owner.

- B. All materials shall be mixed and applied in accordance with the manufacturer's recommendations unless specified otherwise herein.
- C. Materials shall be applied with suitable brushes, rollers and spraying equipment. Keep application equipment clean, dry and free from contaminants. Spraying must be approved by the Owner.
- D. Rate and method of application, drying time between coats, and finished dry mil thickness shall be strictly in accordance with manufacturer's recommendations. Unless specifically recommended otherwise by the manufacturer, two-coat applications shall have a minimum 3-1/2 dry mil thickness, three-coat applications minimum 5 dry mil thickness. Unless hereinafter noted, paint applications shall be a minimum of two (2) coats.
- E. Do not apply first coat until the moisture content of the surface is within the limitations recommended by the paint manufacturer. Test with a moisture meter if requested by the Owner.
- F. Do not apply additional coats until the Owner has inspected previous coats. Only inspected coats will be considered in determining the number of coats applied.
- G. Sand and dust between each coat to remove defects visible from a distance of 5 feet. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping. Paint surfaces visible through grilles one coat flat black.
- H. Finish coats shall be smooth, free of brush marks, streaks, laps or pile up of paints, and skipped or missed areas. Refinish the whole wall if unacceptable finish is extensive or of such a nature that it cannot be repaired by normal touch-up.

3.05 CLEANING

- A. At the completion of all other project work, all paint work shall be touched up and restored where damaged or defaced and the entire work left free from blemishes.
- B. All work adjacent to operations under this Section shall be inspected for damage and stains, and repaired or cleaned prior to the completion of the work.

3.06 SCHEDULES OF WORK

- A. Metal work, Interior and Exterior: All exterior carbon steel exposed surfaces including metal door frames, metal doors and exposed steel shall be painted one prime coat, one field prime touch up and two finish coats.

All interior carbon steel exposed surfaces including metal door frames and metal doors shall be painted one prime and two finish coats. Interior exposed structural steel columns and miscellaneous steel shall be painted one prime coat, one field spot prime coat and one finish coat.

- B. Masonry: Interior masonry surfaces shall be painted one prime coat and one finish coat of epoxy paint.

