Panhandle Public Health Alterations

18 W. 16th Street

Scottsbluff Nebraska

Project Number: 26-213
Date: November 5, 2026

Project Manual

LEE DAVIES ARCHITECTURE

2120 Birchwood Road · North Platte · Nebraska · 69101 · 308-530-9138 · Email: lee@leedarch.com

SPECIFICATIONS FOR

Panhandle Public Health Alterations
18 W. 16th Street
Scottsbluff Nebraska

TABLE OF CONTENTS

Notice to Bidders			00100-1
Instructions to Bidders			IB-1 to IB 3
Project Responsibility			PR-1
Contract Documents Forms			CD-1
General Conditions & Supplementary General Conditions			GSC-1 to GSC-4
Proposal Form			1 page
DIVISION	SECTION	TITLE	PAGE
1		GENERAL REQUIREMENTS	
	01001	General Requirements	01001-1 to 01001-7
	01010	Summary of the Work	01010-1 to 01010-2
	01035	Modifications Procedures	01035-1 to 01035-2
	01040	Coordination	01040-1 to 01040-2
	01045	Cutting and Patching (a)	01045-1 to 01045-4
	01050	Field Engineering	01040-1
	01200	Project Meetings	01200-1 to 01200-3
	01310	Schedules, Reports, Payments	01310-1 to 01310-6
	01340	Submittals	01340-1 to 01340-8
	01400	Use of Premises	01400-1
	01505	Temporary Facilities	01505-1
	01508	Project Identification and Temporary Signs	01508-1
	01705	Project Closeout	01705-1 to 01705-
2		SITEWORK	
	02110	Site Clearing	02110-1 to 02110-3
	02200	Excavating, Filling and Grading	02200-1 to 02200-8
	02515	Portland Cement Concrete Paving	02515-1 to 02515-6
3		CONCRETE	
	03010	Concrete Work	03010-1 to 03010-16
6		WOOD AND PLASTICS	
	06100	Carpentry	06100-1 to 06100-5
	06192	Prefabricated Wood Trusses	06192-1 to 06192-5
	06200	Finish Carpentry	06200-1 to 06200-4

DIVISION	SECTION	TITLE	PAGE
7		THERMAL AND MOISTURE PROTECTION	
	07221	Perimeter and Under Slab Insulation	07221-1 to 07221-2
	07224	Building Insulation	07224-1 to 07224-3
	07620	Metal Flashing and Trim	07620-1 to 07620-3
	07900	Joint Sealers	07900-1 to 07900-9
8		DOORS, WINDOWS, AND GLASS	
	08100	Hollow Metal Work	08100-1 to 08100-7
	08210	Wood Doors & Frames	08210-1 to 08210-3
	08610	Wood Windows	08610-1 to 08210-6
	08700	Finish Hardware	08700-1 to 08700-2
9		FINISHES	
	09250	Gypsum Drywall	09250-1 to 09250-14
	09510	Acoustical Ceilings	09510-1 to 09510-5
	09650	Resilient Flooring	09650-1 to 09650-4
	09680	Carpeting	09680-1 to 09650-4
	09900	Painting	09900-1 to 09900-7
10		SPECIALTIES	
	10661	Wall Protections Systems	10661-1 to 10661-2
12		FURNISHINGS	
	12400	Cabinet & Storage Casework	12400-1 to 12400-8

END OF SECTION

NOTICE TO BIDDERS

The Board of Panhandle Public Health will receive sealed proposals for alterations to **Panhandle Public Health District Office Building in Scottsbluff, Nebraska**, 18 W. 16th Street, Scottsbluff, Nebraska until **11:00 AM Mountain Time on November 25th, 2026**. Proposals shall be privately opened for a single prime contract covering all the work.

Time & Place for Receipt of Sealed Bid Proposal will be received and privately opened:

November 25th, 2026, at 11:00 AM Mountain Time

Place of Receipt of submitted Bids: Panhandle Public Health District
18 W. 16th Street
Scottsbluff, Nebraska 69361

Emailed Bids to: jdavies@pphd.ne.gov

Pre-Bid Walk-Thru:

There will be a pre-bid walk-thru for the Alterations to Panhandle Public Health District Office, 18 W. 16th Street, Scottbluff, Nebraska at the site on **November 16, 2026, at 11:00 AM Mountain Time**. All interested bidding generals, subcontractors, and suppliers are encouraged to attend.

The project consists of building out of existing storage room for 3 new offices, a modified storage room and conditioning of space. Renovation of existing exam room for new exam room layout. Finishing & conditioning of an existing outside storage room. Building new 24'-0" x 40'-0" Garage Building, wood frame construction. And portions of concrete drive replacement. One proposal shall be submitted for the entire project as detailed in the construction documents.

Plans and specifications may be obtained from the Architect, LeeDavies Architecture by calling 308-530-9138.

All interested parties shall visit Panhandle Public Health District website for more information detailing the bid requirements and refer to the Construction Documents issued by the Architect for submitting bids for the project.

Panhandle Public Health District Website link: www.pphd.ne.gov

The owner shall have the right to reject any or all bids, or to reject a bid which is in any way incomplete or irregular and to waive any informalities in any proposal.

INSTRUCTIONS TO BIDDERS

A.I.A. DOCUMENT A701

Article 1

DEFINITIONS:

1.1 All definitions set forth in the General Conditions of the Contract for Construction, A.I.A. Document A201, are applicable to these Instructions to Bidders.

1.2 Bidding Documents include the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, and proposed Contract Documents, including any Bid Bulletins issued prior to receipt of Bids.

1.3 Bid Bulletins are written, or graphic instruments issued prior to the execution of the Contract which modify or interpret the Bidding Documents, including Drawings and Specifications, by additions, deletions, clarifications, or corrections. Bid Bulletins will become part of the Contract Documents when the Construction Contract is executed.

Article 2

BIDDER'S REPRESENTATION:

2.1 Each Bidder by making his Bid represents that he has read and understands the Bidding Documents.

2.2 Each Bidder by making his Bid represents that he has visited the site and familiarized himself with the local conditions under which the work is to be performed.

Article 3

BIDDING PROCEDURES:

3.1 All Bids must be prepared on the Forms provided by the Architect and submitted in accordance with the Instructions to Bidders. Bidders at their discretion shall submit any other forms for bidding as they deem require for clarifications based on their bids.

3.2 A Bid is invalid if it has not been deposited at the designated location prior to the time and date for receipt of Bids indicated in the Advertisement or Invitation to Bid, or prior to any extension thereof issued to the Bidders.

3.3 Unless otherwise provided in any Supplement to these Instructions to Bidders, no Bidder shall modify, withdraw, or cancel his Bid or any part thereof for thirty days (30) after the time designated for the receipt of Bids in the Advertisement of Invitation to Bid.

3.4 Prior to the receipt of Bids, Bid Bulletins will be mailed or delivered to each person or firm recorded by the Architect as having received the Bidding Documents and will be available for inspection wherever the Bidding Documents are kept available for that purpose. Bid Bulletins issued after receipt of Bids will be mailed or delivered only to the selected Bidder.

Article 4

EXAMINATION/INTERPRETATION/CORRECTION OF BIDDING DOCUMENTS:

4.1 Each Bidder shall examine the Bidding Documents carefully and, not later than five (5) days prior to the Date for Receipt of Bids, shall make written request to the Architect for interpretation or correction of any ambiguity, inconsistency, or error therein which he may discover. If any ambiguities should appear in the contract documents, the contractor shall request clarification from the Architect/Engineer before proceeding with the work. If the contractor fails to make such a request, no excuse will thereafter be entertained for failure to carry out the work in a manner satisfactory to the Architect/Engineer. Should a conflict occur with the contract documents, the Contractor is deemed to have estimated the more expensive way of doing the work unless he has requested and obtained a written clarification from the Architect/Engineer before submission of proposed methods or materials. Only a written interpretation or correction by Bid Bulletin shall be binding. No Bidder shall rely upon any interpretation or correction given by any other method.

Article 5

SUBSTITUTIONS:

5.1 Each Bidder represents that his Bid is based upon the materials and equipment described in the Bidding Documents.

5.2 Whenever a material, article or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturer's or vendor's names, trade names, catalog numbers or the like, it is so identified for the purpose of establishing a standard, and any material article or piece of equipment of other manufacturer or vendor which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article or piece of equipment so proposed is, in the opinion of the Architect or equal substance, appearance and functions. It shall not be purchased or installed by the Contractor without the owner preference for certain equipment and the Architect's written approval.

Article 6

QUALIFICATION OF BIDDERS:

6.1 If required, a Bidder shall submit to the Architect a properly executed Contractor's Qualification Statement, A.I.A. Document A305.

Article 7

REJECTION OF BIDS:

7.1 The Bidder acknowledges the right of the Owner to reject any or all bids and to waive any informality or irregularity in any Bid received. In addition, the Bidder recognizes the right of the Owner to reject a Bid if the Bidder failed to furnish any required Bid Form, or to submit the data required by the Bidding Documents, or if the Bid is in any way incomplete or irregular.

Article 8

SUBMISSION OF POST-BID INFORMATION:

8.1 Upon request of the Architect, the selected Bidder shall within five (5) days thereafter submit the following:

8.1.1 A statement of costs for each major item of work included in the Bid.

8.1.2 A designation of the work to be performed by the Bidder with his own forces.

8.1.3 A list of names of the subcontractors or other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for such portions of the work as may be designated in the Bidding Documents or, if no portions are so designated, the names of the subcontractors proposed for the principal portions of the work. The Bidders will be required to establish to the satisfaction of the Architect and the Owner the reliability and responsibility of the proposed subcontractors to furnish and perform the work described in the sections of the Specifications pertaining to such proposed subcontractor's respective trades. Prior to the award of the Contract, the Architect will notify the Bidder in writing if either the Owner or the Architect, after due investigation, has reasonable and substantial objection to any person or organization on such list. If the Owner and Architect have a reasonable and substantial objection to any person or organization, the Bidder may, at his option, withdraw his bid, notwithstanding anything to the contrary contained in Paragraph 3.3. If the Bidder submits an acceptable substitute with an increase in his Bid Price to cover the difference in cost occasioned by such substitution, the Owner may, at his discretion, accept the Increased Bid Price or he may disqualify the Bidder. Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner and Architect must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and Architect. The owner reserves the right to use selected contractors.

Article 10

TAXES, PERMITS AND FEES:

10.1 Bidders shall note the requirements of the General Conditions, Articles 3.6 and 3.7, including the use of Sales Taxes and including the purchase of necessary Permits and Licenses.

END OF INSTRUCTIONS TO BIDDERS

PROJECT RESPONSIBILITY

OWNER:	Panhandle Public Health District 18 W. 16th Street Scottsbluff Nebraska Phone: 308-487-3600 **Contact – Jessica Davies**
ARCHITECT:	LeeDavies Architecture 2120 Birchwood Road North Platte Nebraska 69101 Phone: 308-530-9138 **Contact – Lee Davies AIA – Project Architect**
MECHANICAL ENGINEER:	Geary Engineering 7800 O Street Suite 100 Lincoln Nebraska 68510 Phone: 402-489-7627 **Contact – Chad Lechtenberger – Professional Engineer**
ELECTRICAL ENGINEER:	Geary Engineering 7800 O Street Suite 100 Lincoln Nebraska 68510 Phone: 402-489-7627 **Contact – Ronald Geary – Professional Engineer**

CONTRACT DOCUMENT FORMS

FORM OF DOCUMENTS:

The following Contract Document Forms, as prescribed by the American Institute of Architects, will be utilized in connection with this Contract.

FORM OF CONTRACTS:

The form of Owner-Contractor Agreement that successful bidders will be required to execute shall be that prescribed by the American Institute of Architects in A.I.A. Document No. A101 (2007 Edition).

FORM OF CERTIFICATE OF INSURANCE:

Successful bidders will be required to furnish evidence of the insurance coverages required by this contract in the form prescribed by the American Institute of Architects in A.I.A. Document G715 (200 Edition).

PROPOSAL FORMS:

Bidders are required to submit their proposal on forms furnished for this purpose by the Architect. Proposal forms for Bidders are included within these documents.

CLOSE-OUT DOCUMENTS:

Prior to final progress payment, the Contractor shall be required to submit Contractor's Affidavit of Payment of Debts and Claims, AIA Document G706, and Contractor's Affidavit of Release of Liens, AIA Document G706A with Consent of Surety of Final Payment, AIA Document G707.

GENERAL CONDITIONS

AIA DOCUMENT A201:

The General Conditions of this Contract are those contained in the American Institute of Architects Document A201-2007, Electronic Format "General Conditions of the Contract for Construction," Fifteenth Edition, Articles 1 through 14, 40 pages, hereinafter referred to as the AIA General Conditions. These conditions are hereby incorporated by reference into this document and, except as hereafter modified by the Supplementary General Conditions; their provisions are just as binding as if fully repeated herein. Copies of the AIA General Conditions will be furnished by the Architect upon request.

SUPPLEMENTARY CONDITIONS

The following supplements modify, change, delete from or add to the "General Conditions of the Contract for Construction," AIA Document A201 – 2007, Electronic Format, Fifteenth Edition. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

ARTICLE 3; CONTRACTOR

Add the following:

3.3.1 **The project manager for this project shall have successfully completed three (3) projects of comparable size and complexity**. A list of these projects including names and telephone numbers of Owners and Architects shall be submitted to the architect for review. The Owner reserves the right to reject a proposed Office Project Manager if it is determined that he is not qualified to complete the project in accordance with the requirements of the contract documents.

3.6.2 Sales and Use Taxes on tangible personal property to be incorporated into the Project are to be **included.**

Add the following under Paragraph 3.7.1:

3.7.1.1 The Owner shall make application and file the necessary plans and specifications with the Building Officials and pay the building department & fire department fees necessary to obtain the building permit. General Contractor shall verify all other required permits and licenses required by the city and state, pay, and obtain prior bidding and construction.

3.7.1.2 **The construction superintendent of this project shall have successfully completed three (3) projects of comparable size and complexity**. A list of these projects including names and telephone numbers of Owners and Architects shall be submitted to the architect for review. The Owner reserves the right to reject a proposed construction superintendent if it is determined that he is not qualified to complete the project in accordance with the requirements of the contract documents.

ARTICLE 7; CHANGES IN THE WORK:

Add the following new paragraphs:

7.2.3 Cost shall be limited to the following: cost of materials, including sales tax and cost of delivery, cost of labor, including social security, old age and unemployment insurance and fringe benefits under collective bargaining agreements; workman's compensation insurance; bond premiums; and rental value of power tools and equipment. Overhead shall include the following: supervision, superintendence, wages of timekeepers, watchmen and clerks, hand tools, incidentals, general office expense, and all other expenses not included in "cost".

7.2.4 Itemized change order proposals prepared by Contractors shall remain valid for a period of 30 days after the receipt of such proposal by the Architect.

7.2.5 The maximum percent which shall be allowed for Contractor's combined overhead and profit shall be as follows:

7.2.5.1 For the subcontractor, 5% of the net extra cost of the work he performs. For the Contractor, 5% of the net extra cost of the work performed by subcontractors. For the Contractor 10% of the net extra cost of the work he performs with his own forces.

ARTICLE 8; TIME

Change Paragraph 8.1.2 to read as follows:

8.1.2 The Contractor shall commence work under his contract upon receipt of the authorized "Notice to Proceed" and shall substantially complete the entire project not later than the time in calendar days indicated on the proposal form and approved and agreed upon by the owner.

ARTICLE 9; PAYMENTS AND COMPLETION

Add the following new paragraphs:

9.3.4 The Owners will make payments on account of the contract as follows:

9.3.4.1 90% of the Schedule of Values value, proportionate to the amount of the contract, of labor and materials incorporated in the work and material on the premises, at approximately 30-day intervals, as estimated by the Architect, less the aggregate of previous payments. On substantial completion of the entire work, a sum will be paid in the discretion of the Architect, and the final balance will be paid upon final completion of the work and issuance of the final certificate by the Architect.

9.3.4.2 The 10% retainage on the plumbing, heating, and ventilating (mechanical) work will not be released until all air distribution systems are completely balanced and delivering the specified volumes of air at each outlet, and until all systems and equipment, including controls, have been operating satisfactorily for a period of 30 days.

ARTICLE 11; INSURANCE

Add the following under Paragraph 11.1.2:

A. Workmen's Compensation Insurance and Employer's Liability Insurance

The Contractor shall take out and maintain during the life of this contract the applicable statutory Workmen's Compensation Insurance with an insurance company authorized to write such insurance in this state covering all his employees, and in the case of any work sublet, the Contractor shall require the subcontractor similarly to provide statutory Workmen's Compensation Insurance for the latter's employees. The Contractor shall take out and maintain during the life of this contract, Employer's Liability Insurance with a limit of $100,000 in an insurance company authorized to write such insurance in all states where the Contractor will have employees located in the performance of this contract, and the Contractor shall require each of his subcontractor's similarly to maintain common law liability insurance on his employees.

B. Public Liability Insurance

1. The Contractor shall maintain during the life of this contract, Public Liability Insurance, naming and protecting him, the Architect, and the Owner against claims for damages resulting from (a) bodily injury, including wrongful death, (b) personal injury liability, and (c) property damage which may arise from operations under this contract whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them. The minimum acceptable limits of liability to be provided by such insurance shall be as follows:

(a)	Bodily Injury Limits	$1,000,000 Each Occurrence $1,000,000 Aggregate $2,000,000 Umbrella
(b)	Personal Injury	$1,000,000 Each Occurrence $1,000,000 Aggregate $2,000,000 Umbrella
(c)	Property Damage Limits	$500,000 Each Occurrence $500,000 Aggregate $1,000,000 Umbrella

2. The Public Liability Insurance required by the preceding paragraph shall include the following extensions of coverage:

(a) The coverage shall be provided under a Comprehensive General Liability form of policy or similar thereto.

(b) X. C. U. Coverage - If the contract required any work procedures involving blasting, excavating, tunneling, or other underground work, the liability coverage shall include Standard Blasting or Explosion Coverage, Standard Collapse Coverage and Standard Underground Coverage commonly referred to as X.C.U. Property Damage Liability.

(b) The property damage coverage shall include a Broad Form Property Damage Endorsement.

(d) Contractual Liability coverage shall be included.

(e) Products Liability and/or Completed Operations coverage shall be included.

C. Automobile Liability Insurance

The Contractor shall take out and maintain during the life of the contract such Automobile Liability Insurance as shall protect him against claims for damages resulting from (a) bodily injury, including wrongful death, and (b) property damage which may arise from the operations of any owned, hired, or non-owned automobiles used by or for him in any capacity in connection with the carrying out of this contract. The minimum acceptable limits of liability to be provided by such Automobile Liability Insurance shall be as follows:

(a)	Bodily Injury	$500,000 Each Person $1,000,000 Each Occurrence
(b)	Property Damage Limits	$500,000 Each Occurrence

END OF GENERAL CONDITIONS

BID PROPOSAL FORM

To: Panhandle Public Health District
Panhandle Public Health Alterations
18 W. 16th Street
Hemingford Nebraska

Bid Date & Time:
November 25, 2026
11:00 AM Mountain Time

The undersigned, having carefully examined the Contract Documents, as prepared by the Architect, LeeDavies Architecture, as well as the premises and conditions affecting the work, proposes to furnish all materials and labor, machinery, tools, and services necessary to perform the work as set forth in and in accordance with said documents for the lump sum amount listed.

BASE BID: (Includes all work shown on drawings)

_____ ($_____)

The contract time will be _____ calendar days from the written date of Notice to Proceed.

Receipt of the following Addenda (Bid Bulletins) is hereby acknowledged_____

The Bid Proposal Form is to be placed in a sealed envelope marked **"Bid Proposal –Panhandle Public Health Alterations, Scottsbluff, Nebraska",** and shall be delivered to Panhandle Public Health, 18 W. 16th Street, Scottsbluff, Nebraska or emailed to jdavies@pphd.ne.gov per contract document by **11:00 AM Mountain Time November 25, 2026.** Proposals will be opened privately.

Respectfully Submitted,

Corporation Seal

Signature: _____
Signature Date

Representative: _____
Name Typed or Printed

Company Name: _____

Address: _____

City, State Zip: _____

SECTION 01001 – GENERAL REQUIREMENTS

PART 1 – GENERAL

Section Includes:

Summary of Work: Contract, work by Owner, Contractor use of premises, future work.
Contract Considerations: Cash allowances, schedule of values, applications for payment, change procedures, alternates.

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

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

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

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

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

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

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

General Notes:

These Specifications are of the abbreviated or "streamlined" type and include incomplete sentences. Omissions of words or phrases such as "the Contractor shall", "in conformity with", "shall be", "as noted", "a", "an", "the", and "all" are intentional. Omitted words and phrases shall be supplied by inference in same manner as they are when a "note" occurs on Drawings. Words "shall", or "similar to", shall be supplied by inference.

Unless specifically noted otherwise, all items shall apply to all contractors.

Guarantee Period:

Each Contractor guarantees the work constructed under its contract against defects in material and workmanship for a period of one year from date of substantial completion. CONTRACTOR shall be responsible for removal and replacement of pavement required due to trench settlement even though pavement may not be constructed under his Contract.
Except as set forth below, the guarantee period shall commence on date of final acceptance or on date of substantial completion, whichever is earlier. If a Certificate of Substantial Completion is issued, major items of work not completed shall be listed therewith and the guarantee period on these items shall not commence until such work is completed and accepted.

Complaints Due to Adjustments or Repairs:

Any complaints received by the Architect due to adjustments, operational difficulties, or repairs, within construction time or guarantee time, shall be turned over to Contractor.

Reimbursement to Owner:

Contractor and Subcontractors shall reimburse Owner for expenses incurred by Architect at a rate of $175.00 per hour plus direct expenses for any of following reasons:

At specific request of Contractor or Subcontractors to Owner or Architect for purpose of coordinating work or resolving disputes. Failure of Contractor or Subcontractors to carry out Architect's previous instructions or directions and thereby causing additional expenses to Architect.

Interest Rate:

Where mentioned elsewhere in these Contract Documents, interest rate shall be set at ten percent (10%).

Definition of Terms:

Location of work: Panhandle Public Health
18 W. 16th Street
Scottsbluff, Nebraska

Bidder: Person or persons, firm or corporation that enters a contract with Owner for performance of work.

Work: Includes plant, equipment, tools, materials, labor, and skills required and necessary to accomplish performance of various items of construction or equipment shown on Drawings and Schedules and as outlined in Specifications.

Contract: Contract Description: Stipulated price.

Work by Owner: Items noted as NIC (Not in Contract), will be furnished, and installed by Owner. Items noted as (Install Only), will be furnished by Owner, and installed by General Contractor.

Contractor Use of Premises: Limit use of premises to allow:
Owner occupancy and use during tenant business hours, coordinate work that imposes business.
Work by others and work by Owner.
Use of premises by public when authorized by Owner and General Contractor.
Architect Observations of the Work

Cash Allowances: Costs Included in Allowances: Cost of Product to Contractor or Subcontractor, less applicable trade discounts. Costs Not Included in the Allowance but Included in Contract Sum/Price: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of Products from elements and from damage and labor for installation and finishing. The difference in cost will be adjusted by Change Order.

Schedule of Values: Submit schedule on AIA Form G703 or Contractor may submit his standard form or electronic media printout for consideration.
Submit Schedule of Values in triplicate within 10 days after date established in Notice to Proceed.

Application for Payment: Submit three copies of each application on AIA Form G702 and G703, or other approved form. Content and Format: Utilize Schedule of Values for listing items in Application for Payment. Payment Period: Monthly.

Change Procedures: Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation. Change Order Form.

Coordination: Coordinate scheduling, submittals, and Work of the various sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements. Verify utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate space requirements and installation of mechanical and electrical work, which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable. In finished areas, conceal pipes, ducts, and wiring within the construction.

Progress Meeting:
Contractor will schedule and administer meetings throughout progress of the Work at maximum monthly intervals. The contractor will preside at meetings; record minutes and distribute copies within three days to those affected by decisions made.

Equipment Electrical Characteristics and Components:
Motors: NEMA MG1 Type; specific motor type is specified in individual specification sections.
Wiring Terminations: Terminal lugs to match branch circuit conductor; size terminal lugs to NFPA 70. Cord and Plug: Minimum 6-foot (2 m) cord and plug including grounding connector; cord of longer length is specified in individual sections.

Drainage Control Plan: Contractor shall submit a drainage control plan during construction and apply for appropriate permits to meet all state and local codes.

Cutting and Patching:
Employ a skilled and experienced installer to perform cutting and patching new Work; restore Work with new Products. Submit written request in advance of cutting or altering structural or building enclosure elements. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to fit the several parts together, to integrate with other Work.
Uncover Work to install or correct ill-timed Work.
Remove and replace defective and non-conforming Work.
Remove samples of installed Work for testing.
Provide openings in elements of Work for penetrations of mechanical and electrical Work.
Cut masonry and concrete materials using masonry saw or core drill. Restore Work with new Products in accordance with requirements of Contract Documents.
Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction, completely seal voids.
Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
Refinish surfaces to match adjacent finishes.

Submittal Procedures:
Submittal form to identify Project, Contractor, Subcontractor or supplier; and pertinent Contract Document references.
Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
Revise and resubmit submittals as required; identify all changes made since previous submittal.

Construction Progress Schedules:
Submit initial progress schedule in duplicate within 15 days after date established in Notice to Proceed for

Architect review.
Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.
Submit a horizontal bar chart with separate lines for each section of Work, identifying first workday of each week.

Proposed Products List:
Within 15 days after the date of Notice to Proceed, submit list of major Products proposed for use, with name of manufacturer, trade name, and model number of each product.

Product Data: Submitted to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
After review, provide copies and distribute in accordance with Submittal Procedures article above and for record documents purposes described in Article 1.69 Closeout Procedures.

Product Data for Information:
Submitted for the Architect's benefit as contract administrator or for the Owner.

Product Data for Project Closeout:
Submitted for the Owner's benefit during and after project completion.
Submit the number of copies which the Contractor requires, plus two copies, which will be retained by the Architect.

Shop Drawings:

Shop Drawings for Review:
Submitted to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.
After review, produce copies and distribute in accordance with the submittal procedures article above and for record documents purposes described in Article 1.69 Closeout Procedures.

Shop Drawings for Information:
Submitted for the Architect's benefit as contract administrator or for the Owner.

Shop Drawings for Project Closeout:
Submitted for the Owner's benefit during and after project completion.
Submit the number of opaque reproductions, which Contractor requires, plus two copies, which will be retained by Architect.

Samples for Review:
Submitted to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
After review, produce duplicates and distribute in accordance with submittal procedures article above and for record documents purposes described in Article 1.69 Closeout Procedures.

Samples for Information:
Submitted for the Architect's benefit as contract administrator or for the Owner.

Samples for Selection:
Submitted to Architect for aesthetic, color, or finish selection.
Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect selection. After review, produce duplicates and distribute in accordance with submittal procedures article above and for record documents purposes described in Article 1.69 Closeout Procedures.

Submit samples to illustrate functional and aesthetic characteristics of the Product.
Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect/Engineer's selection.
For brick & EIFS colors provide mockup wall sized approximate 3'-0"x3'-0" for review.

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

Manufacturer Certificates:
When specified in individual specification sections, submit certifications by manufacturer to Architect, in quantities specified for Product Data.
Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

Quality Assurance – Control of Installation:
Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
Comply with manufacturers' instructions.
Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

Examination:
Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
Verify that utility services are available, of the correct characteristics, and in the correct location.

Preparation:
Clean substrate surfaces prior to applying next material or substance.
Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

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

References:
Conform to reference standards by date of issue current as of date of Contract Documents.
Should specify reference standard conflict with Contract Documents, request clarification from Architect before proceeding.

Interior Enclosures:
The General Contractor shall provide temporary partitions as indicated to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

Protection of Installed Work:
General Contractor shall protect installed Work and provide special protection where specified in individual specification sections.
Prohibit traffic or storage upon waterproofed or roofed surfaces.

Security:
General Contractor shall provide security and facilities to protect Work and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

Progress Cleaning and Waste Removal:
Collect and maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition daily.

Products:
Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.
Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by the Contract Documents.
Provide interchangeable components of the same manufacture for components being replaced.

Product Options:
Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
Products Specified by Naming One or More Manufacturers with
A provision for Substitutions: Submit a request for
Substitution for any manufacturer not named.
Approval to use unspecified products will not be given after seven days prior to the bid date.

Substitutions:
Architect/Engineer will consider requests for Substitutions only within 15 days after the date established in Notice to Proceed or when a Product becomes unavailable through no fault of the Contractor.
Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents. Submit three copies of the request for Substitution for consideration. Limit each request to one proposed Substitution.

Contract Closeout Procedures:
Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's inspection.
Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

Final Cleaning:
Execute final cleaning prior to final inspection.
Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces.
Clean debris from sites, roofs, gutters, downspouts, and drainage systems.
Replace filters of operating equipment.
Remove waste and surplus materials, rubbish, and construction facilities from the site.

Operation and Maintenance Data:
Submit two sets prior to final inspection, bound in 8-1/2 x 11-inch text pages, three D size ring binders with durable plastic covers. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project. Internally subdivide the binder contents with permanent page dividers, logically organized, with tab titles clearly printed under reinforced laminated plastic tabs.

Spare Parts and Maintenance Materials:
Provide Products, spare parts, maintenance, and extra materials in quantities specified in individual specification
Deliver to Project site; obtain receipt prior to final payment.

Warranties:
Provide duplicate notarized copies.
Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
Submit prior to final Application for Payment.

Record Set of Documents - formerly known as (As-Builts):
At the completion of the work Contractor shall provide marked-up blue-line drawings and specifications, to the Architect indicating all work as it is built including addendums, change orders, change directives and supplemental instructions, showing all modifications from the original drawings and specifications.

Permits:
The General Contractor shall be responsible for procuring necessary General Building Permits. See General Conditions.

END OF SECTION 01001

SECTION 01010 - SUMMARY OF THE WORK

WORK COVERED BY CONTRACT DOCUMENTS

Work consists of the construction of an addition to the existing Panhandle Public Health building located at 808 Box Butte Avenue, Hemingford, Nebraska as described below:

Base Bid:
The project shall consist of Exam Room Renovation with new casework and finishes, build out of existing storage room into offices and storage room with new HVAC and electrical, build out of existing storage for insulation existing space, wall finishes and new HVAC and electrical with back up generator, and new 24'-0" x 46'-0" wood framed storage building slab on grade, metal panel exterior, interior and roof, HVAC and electrical.

The work of these contracts has been identified in the Contract Documents prepared by LeeDavies Architecture, which include but are not necessarily limited to the following:

The Executed Owner Contractor Agreement (not bound herewith).

The General and Supplementary Conditions (which are bound herewith).

The Drawings which are listed in the "Schedule of Drawings," on title page of drawings as of the date of these contract documents.

The Specifications Sections which are bound herewith, and which are listed in the "Table of Contents" bound herewith.

The Addenda and Modifications which have been distributed prior to the date for receiving bids.

Submittals (of every kind), copies of which are retained by the Contractor at the site.

CONTRACTS

Construction shall be based on a bid accepted by owner through the selection of the general contractor.

Shall be determined based on the submitted bid proposal form.

OWNER-FURNISHED AND INSTALLED PRODUCTS

Products furnished and installed by the Owner and/or his representative shall be coordinated with the owner.

DEMOLITION WORK

The Contractors shall limit removal and demolition work to that specifically called for in the drawings and/or required for the installation of new work. Protect all interior finishes from damage. Any damage to the building shall be fully repaired and restored to match the original construction. Note that the existing building & business convenience store shall remain open throughout construction of the project with minimal shutdowns, any construction work within the existing building shall be coordinated with owner as to maintain operation of business. It is the intention of the owner to operate the existing convenience store while the new building is built and

finished, then move operation over to the new building and renovate existing with limited shut down of business. Contractor shall fully coordinate with owner representative to accomplish as little shut down as possible.
Remove from the jobsite and legally dispose of all debris resulting from demolition operations.

PROTECTION OF PROPERTY

Each Contractor shall take such measures as are necessary to protect the Owner's property and improvements from damage and injury due to his operations and those of his subcontractors. Any damages resulting from construction operations shall be repaired at no expense to the Owner.

Protect streets, roads, parking lots, fences, curbs, and sidewalks from damage and replace any such work damaged as a result of the Contractor's operations.

Protect lawns and plantings outside the contract limit lines and/or areas designated for the Contractor's operations. Repair damaged lawn areas and replace any plantings destroyed as a result of the Contractor's operations.

Where the work involves removal operations which expose existing or new work to the effects of adverse weather, provide weather tight protection as required to protect such areas from rain, wind, dust, and freezing temperatures.

The General Contractor shall provide temporary closures at all openings to prevent unauthorized entry into the building. Close and secure with locks and other suitable measures all such closures when work is not in progress.

USE OF PREMISES

The Contractors shall keep the Owner's representative advised of their work schedules and shall cooperate with the Owner to maximize the Owner's use of the building consistent with efficient and orderly construction progress.

HAZARDOUS MATERIALS

The Contractor and all sub-contractors, suppliers, etc., shall not provide or incorporate any hazardous materials into the building project.

COMPLETION SCHEDULE

Substantial Completion shall be established by the Bidder on the provided bid form based on the owner timeline. The current schedule shall be maintained and distributed by the General Contractor.

> Project time shall start with notice to proceed soon after bid date. Upon notice contractor shall establish a reasonable time to complete entire project in a reasonable time. Contractor shall coordinate with owner and owner tenants as to work done at tenant spaces.

END OF SECTION 01010

SECTION 01035 – MODIFICATION PROCEDURES

PART 1 – GENERAL

Minor Changes in the Work: The Architect will issue instruction authorizing minor changes in the work on LeeDavies Architecture's Supplemental Instructions (ASI) Form.

Owner-Initiated Change Order Proposal Requests: The Architect will issue a description of proposed changes in the Work that require adjustment to the Contract Sum or Time. The description may include supplemental or revised Drawings and Specifications. Proposed modifications shall be submitted to the General Contractor on LeeDavies Architecture's forms.

Proposal Requests are for information only. Do not consider them an instruction to stop work to execute the proposed change.

Within 10 days of receipt, submit an estimate of cost necessary to execute the change for the Owner's review.

Include a detailed itemization of products required and unit costs, with the total number of purchases.

Indicate taxes, delivery charges, equipment rental and amounts of trade discounts if applicable.

Indicate the effect the change will have on the Contract Time.

Contractor-Initiated Proposals: When unforeseen conditions require modifications, the Contractor may submit a request for a change to the Architect.

Describe the proposed change. Indicate reasons for the change and the effect of the change on the Contract Sum and Time.

Include a detailed itemization of projects required and unit costs, with the total number of purchases.

Indicate taxes, delivery charges, equipment rental and amounts of trade discounts if applicable.

Proposal Request Form: Use LeeDavies Architecture's Contract Change Proposal (CCP) Form.

Allowance Adjustment: Base Change Order Proposals on the difference between the purchase amount and the allowance, multiplied by the measurement of work-in-place. Allow for cutting losses, tolerances, mixing wastes, normal product imperfections and similar margins.

Include installation costs only were indicated as part of the allowance.

Prepare explanations and documentation to substantiate margins claimed.

Submit substantiation of a change in work claimed in the Change Orders related to unit cost allowances.

Submit claims for increased costs because of a change in the allowance, whether for purchase order amount or handling, labor, installation, overhead and profit. Submit claims within 21 days of receipt of authorization to proceed. The Owner will reject claims submitted later than 21 days.

Do not include indirect expense in cost amount unless the Work has changed from that described in the Contract Documents.

No change to indirect expense is permitted for selection of higher or lower priced materials or systems of the same scope and nature as originally indicated.

Construction Change Directive: When Owner and Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on LeeDavies Architecture's Construction Change Directive (CCD) Form instructing the Contractor to proceed with the change.

The Construction Change Directive contains a description of the change and designates the method to be followed to determine change in the Contract Sum or Time.

Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

After completing the change, submit an itemized account and supporting data to substantiate Contract adjustments.

Change Order Procedures: Upon the Owner's approval of a Proposal Request, the Architect will issue a Change Order LeeDavies Architecture's Change Order Form.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 01035

SECTION 01040 – COORDINATION

GENERAL

This section includes requirements for coordinating construction operations including, but not limited to the following:

Coordination drawings.
Administrative and supervisory personnel.
Cleaning and protection.

COORDINATION

Coordinate construction to ensure efficient and orderly installation of each part of the Work.

Coordinate equipment installation that is furnished by owner and owner representative.

Coordinate operations that depend on each other for proper installation, connection, and operation.

Schedule operations in the sequence required to obtain the best results where installation of one part depends on installation of other components, before or after its own installation.

Coordinate installation of different components to assure maximum accessibility for maintenance, service,
and repair.

Make provisions to accommodate items scheduled for later installation.

Where necessary, prepare memoranda for distribution to each party involved, outlining procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.

Administrative Procedures: Coordinate scheduling and timing of required procedures with other activities to avoid conflicts and assure orderly progress. Such activities include, but are not limited to, the following:

Preparation of schedules.
Delivery and processing of submittals.
Progress meetings.
Project closeout activities.

Conservation: Coordinate construction to assure that operations are carried out with consideration for conservation of energy, water, and materials.
Salvage materials and equipment involved in performance of, but not incorporated in, the Work.

Coordination Drawings: Prepare coordination drawings if needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space necessitates maximum utilization of space for efficient installation of different components.

Show the relationship of components shown on separate shop drawings.
Indicate required installation sequences.
Comply with requirements contained in Section "Submittals."

Staff Names: Within 10 days of commencement of construction, submit a list of the Contractor's staff assignments, including the superintendent and other personnel at the Project Site. Identify individuals and their responsibilities. List their addresses and telephone numbers.

Post copies in the Project meeting room, the temporary field office, and each temporary telephone.

EXECUTION

Inspection of Conditions: Require Installers of major components to inspect substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.

Coordinate temporary enclosures with inspections and tests to minimize the need to uncover completed construction.

Clean and protect construction in progress and adjoining materials, during handling and installation. Apply protective covering to assure protection from damage.

Clean and maintain completed construction as necessary through the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

Limiting Exposures: Supervise construction to assure that no part is subject to harmful, dangerous, or damaging exposure. Such exposures include, but are not limited to, the following:

0. Excessive static or dynamic loading.
1. Excessive internal or external pressures.
2. Excessively high or low temperatures.
3. Water or ice.
4. Solvents and chemicals.
5. Abrasion.
6. Soiling, staining, and corrosion.
7. Combustion.

END OF SECTION 01040

SECTION 01045 – CUTTING AND PATCHING

PART 1 – GENERAL

RELATED DOCUMENTS

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

DESCRIPTION OF REQUIREMENTS

Definition: "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.

"Cutting and patching" is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.

Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition.

Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching".

Refer to other sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of work.

Refer to Section 01400 - Use of Premises, for controls which shall govern the Contractor's operations within the existing building.

Unless otherwise specified, requirements of this section apply to mechanical and electrical work. Refer to Division 15 and Division 16 sections for additional requirements and limitations on cutting and patching of mechanical and electrical work.

QUALITY ASSURANCE

Requirements for Structural Work: Do not cut and patch structural work in a manner that would result in a reduction of load carrying capacity or of load deflection ratio.

Before cutting and patching the following categories of work, obtain the Architect/Engineer's approval to proceed with cutting and patching as described in the procedural proposal for cutting and patching.

Structural steel.
Miscellaneous structural metals, including lintels, equipment supports, stair systems and similar categories of work.
Structural concrete.
Foundation construction.
Bearing and retaining walls.
Concrete masonry unites.

Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy performance, or that would result in increased maintenance, or decreased operational life or decreased safety.

Visual Requirements: Do not cut and patch work exposed on the building's exterior or in it's occupied spaces, in a manner that would result in substantial visual evidence of cut and patch work. Remove and replace work judged by the Architect/Engineer to be cut and patched in a visually unsatisfactory manner.

SUBMITTALS

Procedural Proposal for Cutting and Patching: Where prior approval of cutting and patching is required, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable, in the submittal:

Describe nature of the work and how it is to be performed indicating why cutting and patching cannot be avoided. Describe anticipated results of the work in terms of changes to existing work, including structural, operational and visual changes as well as other significant elements.

List products to be used and firms that will perform work.

Give dates when work is expected to be performed.

List utilities that will be disturbed or otherwise be affected by work, including those that will be relocated and those that will be out-of-service temporarily. Indicate how long utility service will be disrupted.

Where cutting and patching of structural work involves the addition of reinforcement, submit details and engineering calculations to show how that reinforcement is integrated with original structure to satisfy requirements.

Approval by the Architect/Engineer to proceed with cutting and patching work does not waive the Architect/Engineer's right to later required complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.

PART 2 – PRODUCTS

MATERIALS

General: Except as otherwise indicated, or as directed by the Architect/Engineer, use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics.

PART 3 – EXECUTION

INSPECTION

Before cutting, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

Before the start of cutting work, meet at the work site with all parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict between the various trades. Coordinate layout of the work and resolve potential conflicts before proceeding with the work.

PREPARATION

Temporary Support: To prevent failure provide temporary support of work to be cut.

Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.

Avoid interference with use of adjoining areas or interruption of free passage to adjoining area.

Take precautions not to cut existing pipe, conduit or duct serving the building but scheduled to be relocated until provisions have been made to bypass them.

PERFORMANCE

General: Employ skilled workmen to perform cutting and patching work. Except as otherwise indicated or as approved by the Architect/Engineer, proceed with cutting and patching at the earliest feasible time and complete work without delay.

Cutting: Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible review proposed procedures with the original installer; comply with original installer's recommendations.

In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and masonry using a cutting machine such as a carborundum saw or core drill to insure a neat hole. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.

Comply with requirements of applicable sections of Division 2 where cutting and patching requires excavating and backfilling.

Bypass utility services such as pipe and conduit, before cutting, where such utility services are shown or required to be removed, relocated or abandoned. Cut off conduit and pipe in walls or partitions to be removed. After bypass and cutting, cap, valve or plug and seal tight remaining portion of pipe and conduit to prevent entrance of moisture or other foreign matter.

Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

Where feasible, inspect and test patched areas to demonstrate integrity of work.
Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.

Where removal of walls or partitions extends one finished area into another finished area, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. If necessary to achieve uniform color and appearance, remove existing floor and wall coverings and replace with new materials.

Where patch occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing patch, after patch area has received prime and base coat.

Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

CLEANING

Thoroughly clean areas and spaces where work is performed or used as access to work. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 01045

SECTION 01050 - FIELD ENGINEERING

GENERAL

This Section specifies requirements for field-engineering services including, but not limited to, the following:

Geotechnical Engineer: for soil bearing & concrete testing.
Survey Engineer: for building & site layout.

EXECUTION

A geotechnical firm shall provide a geotechnical soils report of the site as deemed necessary by said engineer and approved by general contractor, architect, and owner.

The geotechnical firm shall also perform the inspections and testing and will be present on the jobsite per soils engineer's requirements during excavation and grading operations. The owner shall pay for soils testing and inspection services required in connection of the controlled structural fill and subgrades within building area and for other soil testing and inspection required for the project.

Coordination: The contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition, the contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

Survey/benchmarks. etc.: Verify layout information shown on drawings in relation to the property survey and existing benchmarks before proceeding to layout of work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.

The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework investigate and verify existence and location of underground utilities and other construction. Prior to construction verify location and invert elevation at points of connection of sanitary sewer, storm sewer, and water service piping.

Site Improvements: Locate and layout site improvements including pavements, stakes for grading, fill and topsoil placement, utility slopes, and invert elevations by instrumentation and similar appropriate means.

Building lines and levels: Locate and layout batter boards for structures, building foundations, column grids. And locations, floor levels. And control lines and levels required for mechanical and electrical work.

Existing Utility: Furnish information necessary to adjust, move or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with local authorities having jurisdiction.

END OF SECTION 01050

SECTION 01200 – PROJECT MEETINGS

GENERAL

This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

Pre-construction conferences.
Progress meetings.

Pre-construction Conference: Owner &/or Architect will schedule a pre-construction conference before starting construction. Review responsibilities and personnel assignments.

Attendees: Authorized representatives of the Owner, Architect, and their consultants; all Contractors and its superintendent; major subcontractors; and other concerned parties shall attend.

Participants shall be familiar with the Project and authorized to conclude matters relating to the Work.

Agenda: Discuss items that could affect progress, including the following:

Tentative construction schedule.
Critical work sequencing.
Submittal of Shop Drawings, Product Data, and Samples.
Use of the premises.

Progress Meetings: The General Contractor shall conduct/coordinate weekly progress meetings at the Project Site at weekly intervals, typically at same time each week. Notify all Contractors, the Owner, and the Architect & all contractors of scheduled dates. Coordinate meeting dates with preparation of the payment request.

Attendees: The Owner, Architect and other entities concerned with current progress or involved in planning, coordination, or future activities shall be represented. Participants shall be authorized to conclude matters relating to the Work.

Agenda: Review and correct or approve minutes of the previous meeting. Review items of significance that could affect progress. Include topics for discussion appropriate to Project status.

Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule. Determine how to expedite construction behind schedule; secure commitments from parties involved to do so. Discuss revisions required to ensure subsequent activities will be completed within the Contract Time.

Review the present and future needs of each entity present, including the following:

Time.
Sequences.
Status of submittals.
Deliveries and off-site fabrication problems.
Temporary facilities and services.
Quality and work standards.
Change Orders.

Reporting: The Construction Manager is to keep and distribute meeting minutes to each party present and to parties who should have been present. Include a summary of progress since the previous meeting and report.

Schedule Updating: Revise the Contractor's Construction Schedule after each meeting where revisions have been made. Issue the revised schedule concurrently with the report of each meeting.

PRODUCTS (Not Applicable)

EXECUTION (Not Applicable)

END OF SECTION 01200

MONTHLY COORDINATION MEETING:

Project: Panhandle Public Health Alterations Date:_____

1. Schedule – Status:

2. Anticipated Delays:

3. Questions with contract documents:

4. Change to the work:

5. Shop drawing status; outstanding, or to be submitted:

6. Coordination of items provided by owner:

7. Construction Manager's concerns:

8. Architect's concerns:

9. Contractor's concerns:

10. Subcontractor's concerns:

11. Pay application review:

12. Next meeting date and time:

SECTION 01310 - SCHEDULES, REPORTS, PAYMENTS

PART 1 - GENERAL

RELATED DOCUMENTS

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

COORDINATION

Coordinate both the listing and timing of reports and other activities required by provisions of this and other sections, to provide consistency and logical coordination between the reports. Maintain coordination and correlation between separate reports by updating at monthly or shorter time intervals. Require each Subcontractor to provide appropriate information for each report and updated report to the Prime Contractor who shall make appropriate distribution of each report and updated report to all parties involved in the work including the Architect/ Engineer and Owner. Provide close coordination of the progress schedule, schedule of values, listing of subcontracts, schedule of submittals, progress reports and payment requests.

PRELIMINARY PROGRESS SCHEDULE

Bar-Chart Schedule: Submit a bar-chart type progress schedule not more than 14 days after the date established for commencement of the work. On the schedule, indicate a time bar for each major category or unit of work to be performed at the site, properly sequenced and coordinated with other elements of work. Coordinate development of the schedule with major subcontractors and suppliers and distribute copies to all parties involved in the work. Show completion of the work sufficiently in advance of the date established for substantial completion of the work.

Superimpose an S-curve, on the schedule to show the "estimated" total dollar-volume of work performed at any date during the Contract Time, with a column of cost figures in the left-hand margin ranging from zero to the Contract Sum.

Submittal Tabulation: With the bar-chart submittal, submit tabulation by date, of the submittals required during the first 90 days of Construction Time. This tabulation shall include both those submittals required during the initial 90 days of construction to maintain the orderly progression of the work, and those submittals required early because of long lead time for manufacture or fabrication. At the Contractor's option, submittal dates may be shown on the bar-chart schedule, in lieu of being tabulated.

FULLY-DEVELOPED PROGRESS SCHEDULE

Bar-Chart Schedule: Based on the preliminary development of the progress schedule, if any, and on whatever updating and feedback may have occurred during the project start-up, secure critical time commitments for performing major elements of the work. Within 60 days of the date established for "commencement of the work", submit a comprehensive bar-chart type progress schedule indicating, by stage-coded symbols, a time bar for each major category or unit of work to be performed at the site; include minor elements of work which are, nevertheless, involved in overall sequencing of the work. Arrange schedule to show graphically the major sequences of work necessary for the completion of related elements of work. Arrange the schedule to show how substantial completion is scheduled to allow for the Architect's/Engineer's procedure for certification of substantial completion. Prepare and maintain the schedule on either a sheet of sufficient width (or else a series of sheets) to show the required data clearly for the entire Construction Time. Prepare the schedule on sheets of stable transparency, or other reproducible material, to permit reproduction for the required distribution.

Phasing: Arrange schedule with notations to show how sequence of work is affected by requirements for phased completion, work by separate contractors, work by Owner, pre-purchased materials, coordination with existing work, limitations of continued occupancies, non-interruptable services, partial occupancy prior to substantial completion, site restrictions, provisions for future work, seasonal variations, environmental control, and similar provisions of total project. Refer to other section of Division 1 and other contract documents for requirements.

Individual Work Stages: Using uniform symbols and crosshatched bars, show significant stages for each category or unit of work. Such stages shall include, but are not necessarily limited to, subcontract letting, submittals, purchases, mock-ups, fabrication, sample testing, deliveries, installation, testing, adjusting, curing, start-up and placement into final use and operation. Within long bars showing fabrication or installation of major units of work of 3 months duration, shown the estimated percentage-of-completion markers at 10 percent increments. As each unit of work progresses, mark each long bar with a contrasting mark at 10 percent increments, to show actual percentage-of-completion.

Area Separations: Arrange the schedule with an individual time bar for each major area of construction of each major category or unit of work. Show where each major category or unit of work must be sequenced or integrated with other work as necessary for structural completion, permanent space enclosure, completion of mechanical and electrical work or completion of some other recognized stage of completion for overall work in that area. Except as otherwise indicated, or subsequently agreed with the Architect/ Engineer, a "major area" is defined for the purpose of this article to mean a story of construction or similar major separation.

Cost Correlation: Immediately below the date line at the heading of the bar-chart, provide a two item cost correlation line, indicating both "precalculated" and "actual" costs. This cost correlation line shall show dollar-volume of work performed as of the same dates used for preparation of payment requests. Refer to subsequent article for cost reporting and payment procedures. In so far as it is practical to do so, use the same units of work in the progress schedule as indicated in the "schedule of values" required by the General Conditions and further specified herein. Provide an estimated monthly payment schedule based on scheduled values and completion of the various portions of the work.

Distribution: Following the initial submittal to and response by the Architect/Engineer, print and distribute progress schedules to the Architect/Engineer (3 copies), Owner, separate contractors, the principal subcontractors and suppliers or fabricators, and others with a need-to-know schedule-compliance requirement. Post copies in the project meeting room and temporary field office. When revisions are made, distribute updated issues to the same entities and post updated issues in the same locations. Delete entities from distribution when they have completed their assigned work and are no longer involved in the performance of scheduled work.

SUBMITTAL SCHEDULE

General: Immediately after the development and acceptance of the fully developed progress schedule, prepare a complete schedule of work-related submittals. Submit this schedule within 10 days of the date required for establishment of progress schedule. Correlate this submittal schedule with the listing of principal subcontractors, as required by the General Conditions, and with the "listing of products" or the "procurement schedule" as specified in "Products and Substitutions" sections and elsewhere in the contract documents.

Form: Prepare the schedule in chronological order of submittals. Show category of the submittal, name of subcontractor, a generic description of the work covered, related section numbers, the activity or event number on the progress schedule, the scheduled date of the first submittals, resubmittals and the final release or approval by the Architect or Engineer. Allow 2 weeks for Architect/Engineer review and action on all submittals.

PROGRESS MEETINGS, REPORTING

General: In addition to specific coordination and pre-installation meetings for each element of work, and other regular project meetings held for other purposes, the Construction Manager shall schedule and chair a general progress meeting each month, with time coordinated with preparation of the payment request. Require each entity then involved in planning, coordination or performance of work to be properly represented at each meeting. Review each entity's present and future needs including interface requirements, time, sequences, deliveries, access, site utilization, temporary facilities and services, hours of work, hazards and risks, housekeeping, change orders, and documentation of information for payment requests. Discuss whether each element of current work is ahead of schedule, on time, or behind schedule in relation with updated progress schedule. Determine how behind-schedule work will be expedited and secure commitments from entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within Contract Time. Review everything of significance which could affect progress of the work.

Initial Progress Meeting: The Architect/Owners Construction Administrator will schedule initial progress meeting, recognized as "Pre-Construction Conference", for a date not more than 15 days after date of commencement of the work. Use it as an organizational meeting, and review responsibilities and personnel assignments.

Reporting: Within 3 days after each progress meeting date, the General Contractor is to distribute copies of minutes-of-the-meeting to each entity present and to others who should have been present. Include summary (in narrative form) of progress of the work since previous meeting and report.

Schedule Updating: Immediately following each progress meeting, where revisions to progress schedule have been made or recognized, revise progress schedule. Reissue revised schedule concurrently with report of each meeting.

SCHEDULE OF VALUES

General: Prepare the schedule of values, as required by the General Conditions, in conjunction with the preparation of the progress schedule. Coordinate preparation of schedule of values and progress schedule. Correlate line items with other administrative schedules and the forms required for the work, including the progress schedule, payment request form, listing of subcontractors, schedule of alternates, listing of products and principal suppliers and fabricators, and the schedule of submittals. Provide breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of payment requests and progress reports. Break down principal subcontract amounts into several line items. Round off to the nearest whole dollar, but with the total equal to the Contract Sum.

Sub-Schedules: Where the work is separated into phases which require separately phased payments to the Contractor, provide sub-schedules showing values correlated with each phase of payment.

Material/Fabrication Values: For each unit of work where payment requests will be made on account of materials or equipment purchased, fabricated, or delivered, but not yet installed, show the "initial value" for the payment request and "value added" for subsequent stage or stages of completion on that unit of work.

Time Coordination: In coordination of initial submittals and other administrative "start-up" activities, submit the schedule of values to the Architect/Engineer at the earliest feasible date, but in no case later than 7 days before initial payment request is to be submitted.

Listing: Arrange the schedule with columns to indicate the generic name of item, related specification sections, the subcontractor, the supplier, manufacturer or fabricator, the dollar value of the item, and the percentage of the Contract Sum to the nearest one-hundredth percent and adjusted to total 100 percent. As Change Orders are executed, list each Change Order as a separate item.

Margins of Cost: Show line items of indirect costs and margins on actual costs, only to the extent such items will be individually listed in payment requests. In general, each item in the schedule of values and in payment requests shall be established to be complete with its total expenses and proportionate share of the general overhead and profit margin. Except as otherwise indicated, those major cost items that are not directly the cost of actual work-in-place, such as distinct temporary facilities, may be either shown as line items in the schedule of values or may be distributed as general overhead expense, at Contractor's option.

PAYMENT REQUESTS

General: Except as otherwise indicated, the progress payment cycle is to be regular. Each application must be consistent with previous applications and payments. Certain applications for payment, such as the initial application, the application at substantial completion, and the final payment application involve additional requirements.

Payment Application Times: The "date" for each progress "payment" is as indicated in Owner-Contractor Agreement or, if none is indicated therein, it is the last day of each month. The period of construction work covered by each payment request is period indicated in Owner-Contractor Agreement or, if none is indicated therein, it is period ending 15 days prior to date for each progress payment and starting day following end of preceding period.

Payment Application Forms: AIA Document G702 and Continuation Sheets; available from "Publications, a Division of the AIA Service Corporation", 1735 New York Avenue, NW, Washington, DC 20006 (also available at most local AIA chapter offices).

Prime Contractor and each subcontractor shall be required to execute the "Contractor/Subcontractor Statement" included at the end of this section at the time of submittal of each application for payment. Applications will not be processed and payment will not be due until the statements are received to the satisfaction of the Owner.

Application Preparation: Except as otherwise indicated, complete every entry provided for on the form, including notarization and execution by authorized persons. Incomplete applications will be returned by Architect/Engineer without action. Entries must match current data of schedule of values and progress schedule and report. Listing must include amounts of change orders issued prior to last day of the "period of construction" covered by application.

Applications for progress payment shall be considered incomplete until recognized and necessary revisions have been made to the integrated progress schedule, and the schedule has been reissued by the Prime Contractor.

Initial Payment Application: The principal administrative actions and submittals which must precede or coincide with submittal of contractor's first payment application can be summarized as follows, but not necessarily by way of limitation:

Listing of subcontractors and principal suppliers and fabricators.

Schedule of values.

Progress schedule (preliminary if not final).

Schedule of principal products.

Schedule of submittals (preliminary if not final).

Application at Time of Substantial Completion: Following issuance of Architect's or Engineer's final "certificate of substantial completion", and in part as applicable to prior certificates on portions of completed work as designated, a "special" payment application may be prepared and submitted by Contractor. The principal administrative actions and submittals which must precede or coincide with such special applications can be summarized as follows, but not necessarily by way of limitation:

Occupancy permits and similar approvals or certifications by governing authorities and franchised services, assuring Owner's full access and use of completed work.

Final cleaning of the work.

Listing of Contractor's incomplete work, recognized as exceptions to Architect's/Engineer's certificate of substantial completion.

Final Payment Application: The administrative actions and submittals which must precede or coincide with submittal of contractor's final payment application can be summarized as follows, but not necessarily by way of limitation:

Completion of project closeout requirements.

Completion of items specified for completion beyond time of substantial completion (regardless of whether special payment application was previously made).

Assurance, satisfactory to Owner, that unsettled claims will be settled and that work not actually completed and accepted will be completed without undue delay.

Transmittal of required project construction records to Owner.

Warranties (guarantees), maintenance agreements and similar provisions of contract documents.

Test/adjust/balance records, maintenance instructions, meter readings, start-up performance reports, and similar change-over information germane to Owner's occupancy, use, operation and maintenance of completed work.

Proof, satisfactory to Owner those taxes, fees and similar obligations of Contractor have been paid.

Removal of temporary facilities, services, surplus materials, rubbish and similar elements.
Change of door locks and other Contractor's access provisions to Owner's property.

Contractor's Affidavit of Payment of Debts and Claims, AIA Document G706, or equivalent.

Contractor's Affidavit of Release of Liens, AIA Document G706A, or equivalent.

Consent of Surety for Final Payment, AIA Document G707 or equivalent.

Application Transmittal: Submit 3 executed copies of each payment application, completed with waivers of lien and similar attachments. Transmit each copy with a transmittal form listing those attachments and recording appropriate information related to application in a manner acceptable to Architect/Engineer. Transmit to Architect/Engineer by means ensuring receipt within 24 hours.

END OF SECTION 01310

SECTION 01340 – SUBMITTALS

PART 1 – GENERAL

RELATED DOCUMENTS

Drawings and general provisions of contract including General and Supplementary Conditions and other Division-1 specifications Sections, apply to this section.

SUMMARY

This section specified administrative and procedural requirements for submittals required for performance of the work including:

- Contractor construction schedule
- Shop drawings
- Product data
- Samples

Administrative Submittals: Refer to other Division 1 Sections and other contract documents for requirements for administrative submittals. Such submittals include but are not limited to:

- Permits
- Applications for payment
- Performance and payment bonds
- Insurance certificates
- List of subcontractors

The schedule of values submittal is included in Section "Applications for Payment".

Inspection and test reports are included in Section "Quality Control Services".

Certification of Asbestos Free Products: Within 30 days of notice to proceed with construction, the contractor shall, in compliance with the Asbestos Hazard Emergency Response Act, of 1986; submit to the Owner a written certification for all known supplies that the products to be supplied are free of asbestos. This certification shall be in letterform on the supplier's letterhead stationery with one copy to be submitted to the architect. Work shall not begin until this submittal is received.

SUBMITTAL PROCEDURES

Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

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

Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.

The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

Processing: Allow sufficient review time so that installation will not be delayed because of the time required to process submittals including time for re-submittals.

Allow two weeks for initial review. Allow additional time if processing must be delayed permitting coordination with subsequent submittals. The architect will promptly advise the contractor when a submittal is being processed must be delayed for coordination.

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

Allow two weeks for reprocessing each submittal.

No extension of contract time will be authorized because of failure to transmit submittals to the architect sufficiently in advance of the work to permit processing.

Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

Provide a space approximately 4" x 5" on the label or beside the title block on shop drawings to record the contractors review and approval markings and the action taken.

Include the following information on the label for processing and recording action taken.

Project name
Date
Name and address of architect
Name and address of contractor
Name and address of subcontractor
Name and address of supplier
Name of manufacturer
Number and title of appropriate specifications section
Drawing number and detail references as appropriate

Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from contractor to architect using a transmittal form. Submittals received from sources other than the contractor will be returned without action.

On the transmittal, record relevant information and requests for data. On the form or separate sheet, record deviations from contract documents requirements, including minor variations and limitation. Include contractor's certification that information complies with contract document requirements.

Transmittal form: Use the sample form at the end of this section for transmittal of submittals.

CONTRACTOR CONSTRUCTION SCHEDULE

Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type contractor's construction schedule. Submit within 30 days of the date established for "commencement of work."

Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the work as indicated in the schedule of values.

Within each time bar indicate estimated completion percentages in 10 percent increments. As work progresses, place a contrasting mark in each bar to indicate actual completion.

Prepare the schedule on a sheet, or series of sheets of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.

Secure time commitments for performing critical elements of the work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the work.

Indicate completion in advance of the date established for substantial completion. Indicate substantial completion on the schedule to allow time for the architect's procedures necessary for certification of substantial completion.

Distribution: Print and distribute copies to the architect, owner, subcontractor, and other parties required to comply with scheduled dates. Post copies in the project meeting room and temporary field office.

When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

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

SHOP DRAWINGS

Approved Products and Services: All substitutions for products and services shall be submitted for approval **7 days prior to bid opening date**. Successful contractors shall only submit approved products and services after that date. NO SUBSTITUITIONS WILL BE ALLOWED after the bid opening date unless the manufacturer no longer provides the originally specified product.

Submit newly prepared information, drawn to accurate scale; include photocopies of equipment and fixtures where appropriate. Highlight, encircle, or otherwise indicate deviations from the contract documents. Do not reproduce contract documents or copy standard information as the basis of shop drawings. Standard information prepared without specific references to the project is not considered shop drawings.

Shop drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:

Dimensions
Identification of products and materials included.
Compliance with specified standards
Notation of coordination requirements
Notation of dimensions established by field measurement.

Sheet size: Except for templates, patterns, and similar full-size drawings, submit shop drawings on sheets at least 8 ½" x 11" but no larger than 30" x 42".

Initial submittal: Submit one correctable translucent reproducible print and one blue- or black line print for the architect's review; the reproducible print and one blueline copy will be returned.

Do not use shop drawings without an appropriate final stamp indicating action taken in connection with construction.

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

Preparation of coordination drawings is specified in section "Project Coordination" and may include components previously shown I detail on shop drawings or product data.

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

PRODUCT DATA

Collect Product Data into a single submittal for each element of construction or system. Product data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, rough-in diagrams and templates, wiring diagrams and performance curves. Where product data must be specifically prepared because standard printed data is not suitable for use, submit as shop drawings.
Mark each copy to show applicable choices and options. Where printed product data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following:

Manufacturer printed recommendations
Compliance with recognized trade association standards
Compliance with recognized testing agency standards
Application of testing agency labels and seals.
Notation of coordination requirements.

Do not submit product data until compliance with requirements of the contract documents has been confirmed.

Submittals: **Shall be in electronic form submitted with cover to the architect's office emailed**. Material samples shall be as per section. Only if approved by the architect hard copies can be submitted with a 5 minimum required submittal. The contractor shall maintain an approved hard copy of all shop drawings on site at job trailer.

Unless noncompliance with contract provisions is observed, the submittal may serve as the final submittal.

Distribution: Furnish copies of reviewed submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

Do not proceed with installation until an applicable copy of product data applicable is in the installer's possession.

Do not permit use of unmarked copies of product data in connection with construction.

SAMPLES

Submit full-size fully fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.

Mount, display, or package samples in a manner specified to facilitate review of qualities indicated. Prepare samples to match architect sample. Include the following:

Generic description of sample
Sample source
Product name or name of manufacturer
Compliance with recognized standards
Availability and delivery time.

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

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

Refer to other specification sections for requirements for samples that illustrate workmanship, fabrication techniques, and details of assembly, connections, operation, and similar construction characteristics.

Refer to other sections for samples to be returned to the contractor for incorporation in the work. Such samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of sample submittals.

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

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

Submittals: Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.

Maintain sets of samples, as returned at the project site, for quality comparisons throughout the course of construction.

Unless noncompliance with contract document provisions is observed, the submittal may serve as the final submittal.

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

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

Field samples specified in individual sections are special types of samples. Field samples are full-size examples erected on site to illustrate finishes, coatings, or final materials and to establish the standard by which the work will be judged.

Fully comply with submittal requirements possible. Process transmittal forms to provide a record of the activity.

ARCHITECT ACTION

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

Compliance with specified characteristics is the contractor's responsibility.

Action Stamp: The architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked as follows to indicate the action taken:

A - No Exceptions Taken: Where submittal is marked "Approved" that part of the work covered by the submittal may proceed provided it complies with requirements of the contract documents; final acceptance will depend on that compliance.

B - Furnish as Corrected: When submittals are marked "Approved as Noted" that part of the work covered by the submittal may precede provided it complies with the notations or corrections on the submittal and requirements of the contract documents; final acceptance will depend on that compliance.

C - Revise and Resubmit: When submittal is marked "Not Approved, Revise and Resubmit" do not proceed with that part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations, resubmit without delay. Repeat if necessary to obtain a different action mark.

D - Rejected - Resubmit: Do not proceed with the work. Items submitted do not comply with project requirements. Resubmit for indicated items in accordance with notations and remarks thereon. Do not allow submittals with the following marking to be used in connections with performance of the work.

E - No Action Taken: No action taken with submittal.

PART 2 - PRODUCTS (not applicable)

PART 3 – EXECUTION (not applicable)

The following are samples forms provided by LeeDavies Architecture.

SAMPLE FORMS

REQUEST FOR INFORMATION/CLARIFICATION (RFI)

This form is to be used by the Contractor to request clarification of areas of confusion and/or conflict in the Contract Documents. The Contractor or a prime subcontractor may request information from the Architect using this form to document such a request and the response thereto.

The Contractor or prime subcontractor shall complete the top portion of the form. Each form shall have its own unique consecutive number, i.e., G-1, G-2, G-3... for the Contractor, E-1, E-2, E-3... for the electrical subcontractor, M-1, M-2, M-3...for the mechanical subcontractor, etc. If a series of RFI's is generated on the same problem, the subsequent RFI's are to be numbered the same as the first with a decimal suffix; i.e., G-8, G-8.1, G-8.2...etc.

The top portion of the RFI should make specific reference to the Contract Document, Specification or Drawing in question and the problem should be described as clearly as possible. The RFI shall be transmitted directly to the Architect with a copy to the Owner.

The Architect will respond to the request on the lower portion of the form and will return it to the Contractor and subcontractor, if appropriate, with a copy going to the Owner and other interested parties. This completed form will become an official interpretation of the Contract Documents and it will be the Contractor's responsibility to execute the Work in accordance therewith.

ARCHITECT SUPPLEMENTAL INSTRUCTIONS (ASI)

This form will be used by the architect to provide additional information for the project to the contractor or a clarification to the contract documents. This form along with any drawings or specifications shall be noted on the sheet and sent to the contractor for his use.

CHANGE PROPOSAL REQUEST (CPR)

If during the project it becomes necessary or is desired by the Owner or Architect to make changes in the Work, a Change Proposal Request (CPR) will be issued to ask that the Contractor determine the cost and/or time consequences of such change. The Architect will prepare the CPR describing the desired change(s) and both the Owner and the Architect must sign it before the Contractor takes any action.

The CPR will clearly state the changes contemplated in the Work and will reference the Contract Documents, Specifications and Drawings involved and will include such additional drawings and specifications necessary to describe the changes.

The signed CPR will be forwarded to the Contractor for review and preparation of a contract change proposal. This proposal will be made using a Contract Change Proposal (CCP) form.

CONTRACT CHANGE PROPOSAL (CCP)

This form shall be used by the Contractor to communicate the cost and/or time consequences of a proposed change in the Work as described in an approved Change Proposal Request (CPR).

The completed CCP must be accompanied by all back-up documentation necessary to allow the Architect and Owner to evaluate the proposal. The documentation should include quantity take-offs on all materials, material unit

costs, labor hours and rates, labor burden, insurance, bond, overhead and profit. Costs from subcontractors shall be documented in the same manner.

The completed CCP and all documentation shall be submitted to the Architect for review. The Architect will then forward the CCP and documentation, along with recommendation(s) to the Owner. Accepted CCP's will be used as the basis for preparing change orders.

CONSTRUCTION CHANGE DIRECTIVE (CCD)

The CCD form is used by the Architect and Owner to order changes in the Work when:

1. Emergencies or time constraints will not allow the normal CPR/CCP method of obtaining cost and/or time change proposals and preparing change orders, or
2. The Contractor, Architect and Owner are unable to agree on a cost for necessary changes in the Work.

This form is to be prepared and signed by the Architect and must always be signed by the Owner before it becomes effective.

Adjustments to the Contract Sum involved with changes in the work ordered using this form is to be determined in accordance with Article 7.3.3 of the General Conditions (AIA A201-1987). The Contractor shall submit an itemized accounting together appropriate supporting data as required. Adjustments to the Contract Sum and/or Contract Time will be made by change order.

SHOP DRAWING TRANSMITTAL (SDT)

This form is to be used by the Contractor and be submitted with each shop drawing.

The Contractor shall complete the top portion of the form. Each form shall have its own unique consecutive number, i.e., 1, 2, 3… to reference each submitted shop drawing submittal. The Contractor shall mark who reviewed the shop drawings from their company. Then fill out the appropriate information under the headings Section / Paragraph, Description, Manufacturer, Drawing Number and Number of Copies for each item submitted.

The representative from the Architect after their review shall mark the Action Taken box with the appropriate action. Then note any remarks and signing date and return the executed copy to the Contractor.

END OF SECTION 01300

SECTION 01400 – USE OF PREMISES

USE OF SITE

Parking & Job site use: Parking and use of job site shall remain within the boundries of the site property lines on lots that builidng is be built. Coordination with owner and owner representative layout of site for construction purpose. Note that there is limited area on site for extensive parking for the project and public street parking in the general area shall be utilized, with coordination of the owner.

Restoration of Site: Upon completion of the work, clean designated site area thoroughly, restore original grade, and prepare subgrade for restoration of lawn area, and resod any lawn area damages as a result of the Contractor's use of this area.

BUILDING CONTROLS

General: The following controls shall govern the Contractor's operations within the building. Advise Owner's representative of work scheduled and cooperate with the Owner to minimize disruption of services being provided in the building.

Access: The Contractor's access to the work for workmen and for the delivery of materials shall be coordinated with the owners representative

Off-Limit Areas: Any area not included within the property lines of the lot being developed by the owner without prior approval of said owner.

Storage and Work Areas: Limits of the work area or storage facilities shall be provided by the General Contractor on site.

Utilities: Maintain all existing utility services and air handling provisions in operation during the course of the work except for such temporary interruptions as may be required for the installation or connection of new work. Coordinate any interruption of such services with the Owner.

CUTTING AND PATCHING

The Contractor shall limit removal and demolition work to that specifically called for in the drawings and/or required for the installation of new work. Protect all interior finishes from damage. Any damage to the building shall be fully repaired and restored to match the original construction.

Remove from the jobsite and legally dispose of all debris resulting from demolition operations.

PROTECTION OF PROPERTY

The Contractor shall take such measures as are necessary to protect the Owner's property and improvements from damage and injury due to his operations and those of his subcontractors. Any damages resulting from construction operations shall be repaired at no expense to the Owner.

Protect streets, roads, parking lots, fences, curbs, and sidewalks from damage and replace any such work damages as a result of the Contractor's operations.

SECTION 01505 – TEMPORARY FACILITIES

DESCRIPTION OF WORK

Furnish and install temporary facilities as hereafter listed and pay all costs associated therewith, including costs of installation, maintenance, and removal. Pay costs of all utilities, energy, or fuels associated with or required by temporary facilities during construction.

TEMPORARY UTILITIES

Water: The Contractor may make such temporary connections to existing water lines or outlets as are required to obtain water for construction operations. The cost of water used in construction operation shall be paid for by the Owner.

Electricity: The Contractor may make such temporary connections to existing power as may be required to obtain electrical power for construction operations. The Contractor shall be responsible for determining the capacity of the distribution system serving any such connections and shall not permit the connection of any electrical loads in excess of the operations. Electrical contractor shall provide minimum (24) - 110 volt circuits and (2) – 220 or as deemed required for the crews working.

Drinking Water: The Contractor shall provide drinking water for all those connected with the work.

TEMPORARY TELEPHONE SERVICE

Temporary telephone service as described below shall be provided by the Contractor.

Furnish on site minimun 1 point of contact with phone:

Provide one direct line instrument or cell phone located in the area of the work.

SANITARY FACILITIES

The Contractor shall provide temporary enclosed, portable toilet facilities for the use of all workmen employed on the site for the duration of the project. Locate toilets on exterior of building within site area designated for Contractor's use.

The Contractor shall furnish dumpster or approved appratus for trash disposal for general construction usage.

Maintain strict supervision of the use of facilities to assure the following:

Conformation with local sanitary standards.

Maintenance, service, and cleanliness of the facilities.

Proper use of the facilities.

END OF SECTION 01505

SECTION 01508 - PROJECT IDENTIFICATION AND TEMPORARY SIGNS

PART 1 - GENERAL

RELATED DOCUMENTS

The general provisions of the Contract, including General and Supplementary Conditions and other General Requirements sections, apply to the work specified in this section.

DESCRIPTION OF REQUIREMENTS

This section of General Requirements specifies minimum requirements for Project Identification and Temporary Signs.

PART 2 - PRODUCTS

MATERIALS FOR PROJECT IDENTIFICATION AND TEMPORARY SIGNS

General: General contractor shall provide signage in work area as to required areas to be off limits by tenants or tenants clients at time of work. Maintain signs to help tenants / clients know location of access to tenant services as needed during construction.

PART 3 - EXECUTION

INSTALLATION OF PROJECT IDENTIFICATION AND TEMPORARY SIGNS

Project Identification and Temporary Signs:

General: Maintain signs through construction period in a manner which will properly inform both the public and persons. Do not allow installation of other unauthorized signs which are made visible to persons outside project site. All other signage shall be approved by architect / owner prior to installation and be at the contractors expense without any allowcations to the owner project.

END OF SECTION 01508

SECTION 01705 – PROJECT CLOSEOUT

PART 1 – GENERAL

RELATED DOCUMENTS

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

DESCRIPTION OF REQUIREMENTS

Definitions: Closeout is hereby defined to include general requirements near end of Contract Time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in sections of Division 2 through 16. Time and closeout are directly related to "Substantial Completion", and therefore may be either a single time period for entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section.

PREREQUISITES TO SUBSTANTIAL COMPLETION

General: Prior to requesting Architect's/Engineer's inspection for certification of substantial completion (for either entire work or portions thereof), complete the following and list known exceptions in request:

In progress payment request, coincident with or first following date claimed, show either 100% completion for portion of work claimed as "substantially complete", or list incomplete items, value of incompletion, and reasons for being incomplete.

Include supporting documentation for completion as indicated in these contract documents.

Submit statement showing accounting of changes to Contract Sum which have not been reflected in executed change orders.

Advise Owner of pending insurance changeover requirements.

Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.

Obtain and submit releases enabling Owner's full and unrestricted use of the work and access to services and utilities, including (where required) occupancy permits, operating certificates, and similar releases.

Discontinue (or change over) and remove from project site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.

Complete final cleaning up requirements, including touch-up painting of marred surfaces.
Touch-up and otherwise repair and restore marred exposed finishes.

Inspection Procedures: Upon receipt of Contractor's written request, Architect/Engineer will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, Architect/ Engineer will either prepare certificate of substantial completion or advise Contractor of work which must be performed prior to issuance of certificate; and repeat inspection when requested and assured that work has been substantially completed. Results of completed inspection will form initial "punch-list" for final acceptance.

PREREQUISITES TO FINAL ACCEPTANCE

General: Prior to requesting Architect's/Engineer's final inspection for certification of final acceptance and final payment, as required by General Conditions, complete the following and list known exceptions (if any) in request:

Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and complete operations where required.

Submit updated final statement, accounting for additional (final) changes to Contract Sum.

Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey and similar final record information.

Submit certified copy of Architect's/Engineer's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed, and dated by Architect/Engineer.

Submit final meter readings for utilities, measured record of stored fuel, and similar data as of time of substantial completion or when Owner took possession of and responsibility for corresponding elements of the work.

Submit consent of surety.

Submit final liquidated damages settlement statement, acceptable to Owner.

Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.

Reinspection Procedure: Upon receipt of Contractor's written notice that the work has been completed, including punch-list items resulting from earlier inspections, and accepting incomplete items delayed because of acceptable circumstances, Architect/Engineer will reinspect the work. Upon completion of reinspection, Architect/Engineer will either prepare certificate of final acceptance or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, the procedure will be repeated. Costs for such reinspections by the Architect/Engineer shall be paid by the Owner and deducted from the final payment due to the Contractor.

Construction Administrator and/or Architect shall be compensated for additional services at the Specified following rates:

Architect	$175.00

RECORD DOCUMENT SUBMITTALS

General: Specific requirements for recorded documents are indicated in individual sections of these specifications. Other requirements are indicated in General Conditions. General submittal requirements are indicated in "Submittals" sections. Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for Architect's/Engineer's reference during normal working hours.

Record Drawings: Maintain a whiteprint set (blueline or blackline) of contract drawings and shop drawings in clean, undamaged condition, with markup of actual installations which vary substantially from the work as originally shown. Mark whichever drawing is most capable of showing "field" condition fully and accurately; however, where shop drawings are used for markup, record a cross reference at corresponding location on working drawings. Mark with red erasable pencil and, where feasible, use other colors to distinguish between

variations in separate categories of work. Markup new information, which is recognized to be of importance to Owner, but was for some reason not shown on either contract drawings or shop drawings. Give particular attention to concealed work, which would be difficult to measure and record later. Note related to change order numbers where applicable. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates, and other identification on cover of each set.

Record Specifications: Maintain one copy of specifications, including addenda, change orders and similar modifications issued in printed form during construction, and markup variations (of substance) in actual work in comparison with text of specifications and modifications as issued. Give particular attention to substitutions, selection of options, and similar information on work where it is concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and product data, where applicable. Upon completion of markup, submit to Architect/Engineer for Owner's records.

Record Sample Submittal: Immediately prior to date(s) of substantial completion, Architect/Engineer (and including Owner's personnel where desired) will meet with Contractor at site and will determine which (if any) of submitted samples maintained by Contractor during progress of the work are to be transmitted to Owner for record purposes. Comply with Architect's/Engineer's instructions for packaging, identification marking, and delivery to Owner's sample storage space.

Miscellaneous Record Submittals: Refer to other sections of these specifications of requirements of miscellaneous recordkeeping and submittals in connection with actual performance of the work. Immediately prior to date(s) of substantial completion, complete miscellaneous records and place in good order, properly identified and bound to filed, ready for continued use and reference. Submit to Architect/Engineer for Owner's records.

Maintenance Manuals: Organize maintenance and operating manual information into suitable sets of manageable size and bind into individual binders properly identified and indexed (thumb tabbed). Include emergency instructions, spare parts listing, copies of warranties, wiring diagrams, recommended "turnaround" cycles, inspection procedures, shop drawings, product data, and similar applicable information. Bind each manual of each set in a heavy duty 2", 3-ring vinyl covered binder, and include pocket folders for folded sheet information. Mark identification on both front and spine of each binder. If applicable

EVIDENCE OF PAYMENTS, AND RELEASE OF LIENS

The Contractor shall prepare and execute the following documents and deliver to the Architect:

Contractor's Affidavit of Payment of Debts and Claims: AIA G706.
Contractor's Affidavit of Release of Liens: AIA G706A, with:

Consent of Surety to Final Payment: AIA G707.

Contractor's release or waiver of liens.

Separate releases of waivers of liens for subcontractors, suppliers, and others with lien rights against property of Owner, together with list of those parties.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

CLOSEOUT PROCEDURES

General Operating/Maintenance Instructions: Arrange for each installer of work requiring continuing maintenance or operation, to meet with Owner's personnel, at project site, to provide basic instructions needed for proper operation and maintenance of entire work. Include instructions by manufacturer's representatives where installers are not expert in the required procedures. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning and similar procedures and facilities. For operational equipment, demonstrate start--up, shutdown, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, energy effectiveness, and similar operations. Review maintenance and operations in relation with applicable warranties, agreements to maintain, bonds, and similar continuing commitments.

FINAL CLEANING

General: Special cleaning for specific units of work is specified in sections of Divisions 2 through 16. General cleaning during the progress of work is specified in General Conditions and as temporary services in "Temporary Facilities" section of this Division. Provide final cleaning of the work, at time indicated, consisting of cleaning each surface or unit of work to normal "clean" condition expected for a first-class building cleaning and maintenance program. Comply with manufacturer's instructions for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required:

Remove labels which are not required as permanent labels.

Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances which are noticeable as vision-obscuring materials. Replace broken glass and damaged transparent materials.

Clean exposed exterior and interior hard-surfaced finishes, to a dirt-free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

Wipe surfaces of mechanical and electrical equipment clean, including elevator equipment and similar equipment; remove excess lubrication and other substances.

Remove debris and surface dust from limited access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.

Clean concrete floors in non-occupied spaces broom clean.

Vacuum clean carpeted surfaces and similar soft surfaces.

Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.

Clean light fixture and lamps function with full efficiency.

Clean project site (yard and grounds), including landscape development areas, of litter and foreign substances. Sweep paved areas to a broom clean condition; remove stains, petrochemical spills, and other foreign deposits. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface.

Removal of Protection: Except as otherwise indicated or requested by Architect/Engineer, remove temporary protection devices and facilities which were installed during course of the work to protect previously completed work during remainder of construction period.

Compliances: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at site, or bury debris or excess materials on Owner's property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from site and dispose of in a lawful manner.

Where extra materials of value remaining after completion of associated work have become Owner's property, dispose of these to Owner's best advantage as directed.

See Project Closeout Checklist at end of this section to be completed by general contractor and submitted to architect office prior to final closeout.

See Warranty Work Request form provided by architect to be used by owner for potential warranty request items.

END OF SECTION 01705

SECTION 02110 – SITE CLEARING

PART 1 – GENERAL

DESCRIPTION OF WORK

The extent of site clearing is shown on the drawings.

Site clearing work includes, but is not limited to, the following:

Protection of possible existing trees.

Topsoil stripping.

Removing any above grade improvements.

Removing any below grade improvements.

Related Work Specified Elsewhere:

Excavating, Filling and Grading: Section 02200

JOB CONDITIONS

Protection of Existing Improvements (where applicable):

Provide protections necessary to prevent damage to existing improvements indicated to remain in place.

Protect improvements on adjoining properties and on the Owner's property.

Restore damaged improvements to their original condition, as acceptable to parties having jurisdiction.

Protection of Existing Trees and Vegetation (where applicable):

Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

Water trees and other vegetation to remain within the limits of the contract work as required to maintain their health during the course of construction operations.

Provide protection for roots over 1½" diameter cut during construction operations. Coat the cut faces with emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.

Repair or replace trees and vegetation damaged by construction operations, in a manner acceptable to the Architect. Repair tree damage by a qualified tree surgeon.

Replace trees which cannot be repaired and restored to full growth status, as determined by the tree surgeon.

Improvements on Adjoining Property: Authority for performing removal and alteration work on property adjoining the Owner's property will be obtained by the Owner prior to award of contract.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

SITE CLEARING

General:

Remove vegetation, improvements, or obstructions interfering with installation of new construction. Remove such items elsewhere on the site or premises as specifically indicated. Removal includes stumps and roots.

Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction.

Topsoil:

Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4". Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2" in diameter, and without weeds, roots, and other objectionable material.

Strip topsoil to whatever depths encountered in a manner to prevent intermingling with the underlying subsoil or other objectionable material. Topsoil to be striped separate from gravel mixed surface.

Stockpile topsoil in storage piles in areas shown, or where otherwise directed. Construct storage piles to freely drain surface water. Topsoil free from gravel to be places at areas of new grass as indicated on drawing. Coordinate with the Owner as to the quality of the topsoil prior to placing in these areas. If topsoil is not acceptable, the contractor is to dispose of it off site, (along with the remaining unused topsoil and gravel).

Disposal of topsoil the same as waste material, herein specified.

Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

Place fill material in horizontal layers not exceeding 6" loose depth and thoroughly compact to a density equal to adjacent original ground.

Removal of Improvements:

Remove above grade and below grade improvements necessary to permit construction, and other work as indicated.

The abandonment or removal of certain underground pipe or conduits may be shown on mechanical or electrical drawings, and is included under work of those sections. Removal of abandoned underground piping or conduit interfering with construction is included under this section.

DISPOSAL OF WASTE MATERIALS

Removal to Owner's Spoil Area (coordinate with Owner):

Transport noncombustible waste materials and unsuitable topsoil materials to designated spoil areas on the Owner's property and dispose of as directed.

Transport waste materials and unsuitable topsoil materials to designated spoil areas on the Owner's property and dispose of as directed.

Removal from Owner's Property (where applicable): Remove waste materials and unsuitable and excess topsoil from the Owner's property and dispose of legally.

END OF SECTION 02110

SECTION 02200 - EXCAVATING, FILLING, AND GRADING

PART 1 - GENERAL

SUMMARY

The extent of earthwork is shown on the drawings.

The following operations are included as a part of the work of this section:

Excavating unsuitable subgrade material in areas and to depths indicated.

Placing controlled structural fill in areas from which unsuitable subgrade material is removed.

Preparing subgrade for building slabs.

Preparing subgrade for walks and pavements.

Installing drainage fill course under building slabs.

Backfilling trenches within building lines.

Excavation for Mechanical/Electrical Work: Refer to Divisions 15 and 16 sections in footing and foundation package specifications for excavation and backfill required in conjunction with underground mechanical and electrical utilities and buried mechanical and electrical appurtenances; not work of this section.

Definition: "Excavation" consists of removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed.

QUALITY ASSURANCE

Testing and Inspection Service: Employ, at Contractor's expense, testing agency approved by architect to perform soil testing and inspection service for quality control testing during earthwork operations.

SUBMITTALS

Test Reports-Excavating: Submit 2 copies of the following reports directly to the Architect & Construction Manager from the testing services, with copy to the Contractor:

Test reports on borrow material.
Field density test reports.
One optimum moisture-maximum density curve for each type of soil encountered.
Verification of Subgrade conditions in areas shown to receive controlled structural fill.

JOB CONDITIONS

Site Information: Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data are made available for the convenience of Contractor.

Additional test borings and other exploratory operations may be made by Contractor at no cost to Owner.

Existing Utilities: Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when permitted in writing by Architect and then only after acceptable temporary utility services have been provided.

Provide minimum of 48-hour notice to Architect/
Engineer, and receive written notice to proceed before interrupting any utility.

Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shut-off of services if lines are active.

Use of Explosives: The use of explosives is not permitted.

Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction.

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART 2 - PRODUCTS

SOIL MATERIALS

Drainage Fill: Evenly graded mixture of natural or crushed gravel, crushed stone, and natural sand with 100% passing a 1-1/2" sieve, and 0-5% passing a no. 50 sieve.

Material for Controlled Structural Fill: approved material by geotechnical engineer

Material for Backfill and Fill: approved material by geotechnical engineer

PART 3 - EXECUTION

TOPSOIL

Strip topsoil to whatever depths encountered and, in such manner, so as to prevent intermingling with the underlying subsoil or other objectionable material. Remove heavy growths of grass, gravel, and cinders from area before stripping. See boring logs contained in the soils report for topsoil depths at boring locations.

Stockpile topsoil in storage piles in areas shown, or where otherwise directed. Construct storage piles to freely drain surface water.

EXCAVATION

Excavation is unclassified, and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions encountered.

Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Architect. Unauthorized excavation, as well as remedial work directed by the Architect, shall be at the Contractor's expense.

Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Architect.

Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Architect.

Additional Excavation: When excavation has reached required subgrade elevations, notify the Architect who will make an inspection of conditions.

If unsuitable bearing materials are encountered at the required subgrade elevations, carry excavations deeper and replace the excavated material as directed by the Architect working with soils engineer.

Removal of unsuitable material and its replacement as directed will be paid on the basis of contract conditions relative to changes in work.

Stability of Excavations: Scope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

Maintain sides and slopes of excavations in safe condition until completion of backfilling.

Shoring and Bracing: Provide materials for shoring and bracing such as sheet piling, uprights, shingles and cross braces, in good serviceable condition.
Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.
Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Convey water removed from excavations and rainwater to collecting or runoff areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage. Locate and retain soil materials away from edge of excavations.

Dispose of excess soil material and waste materials as herein specified.

Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive concrete.

Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations and grades as shown.

Excavation for Trenches: Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room. Provide 6" to 9" clearance on both sides of pipe or conduit.

Excavate trenches to the depth indicated or required. Carry the depth of trenches for piping to establish the indicated flow lines and invert elevations. Beyond the building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freeze-ups.

Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for the entire body of the pipe.

Backfill trenches with concrete where trench excavations pass within 18" of column or wall footings and which are carried below the bottom of such footings, or which pass under wall footings. Place concrete to the level of the bottom of adjacent footing.

Concrete is specified in Division 3.

Do not backfill trenches until tests and inspections have been made and backfilling authorized by the Architect. Use care in backfilling to avoid damage or displacement of pipe systems.

Over-Excavation: Remove soil material which has been identified as being unsuitable for support of overlying construction from the following areas to the depths indicated. Prior to beginning placement of fill in such areas, obtain soil testing laboratory's verification of subgrade conditions.

Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

COMPACTION

General: Control soil compaction during construction providing minimum percentage of density specified for each area classification.

Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum dry density of the same soil material compacted at optimum moisture content, for the actual density of each layer of soil material in-place, using the ASTM D 698-91 test procedure.

Understructures, Building Scabs, Steps, Pavements: Compact top 12" of subgrade and each layer of backfill of fill material at 97% maximum density, placed with a moisture content of optimum plus or minus 2%.

Foundation Wall Backfill: Compact each layer of backfill material at 95% maximum density, placed with a moisture content of optimum plus or minus 2%.

Fill and Backfill at Lawns or Unpaved Areas: Compact top 6" of subgrade and each layer of backfill or fill material at 92% maximum density, placed with a moisture content of optimum plus or minus 2%.

Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material. Apply water to prevent free water appearing on surface during or subsequent to compaction operations.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

BACKFILL AND FILL

General: Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below.

In areas shown to receive controlled structural fill, use on-site excavated material which has been examined and approved by soils testing laboratory. For backfill to foundation walls, use onsite excavated material.

For fill and backfill under lawns or unpaved areas, use on-site excavated material.

For fill and backfill under paved areas, use on-site excavated material.

Backfill excavations as promptly as work permits, but not until completion of the following:

Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.

Inspection, testing, approval, and recording locations of underground utilities.

Removal of concrete formwork.

Removal of shoring and bracing and backfilling of voids with satisfactory materials.

Removal of trash and debris.

Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

When existing ground surface has density less than that specified under "Compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

Placement and Compaction: Place backfill and fill materials in layers not more than 8" in loose depth for material compacted by heavy compaction equipment and not more than 4" in loose depth for material compacted by hand-operated tampers.

Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

Place backfill and fill materials evenly adjacent to structures, to required elevations. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around structure to approximately same elevation in each lift.

GRADING

General: Uniformly grade areas within limits of grading under this section including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, and as follows:

Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10' above or below the required subgrade elevations.

Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10' above or below the required subgrade elevation.

Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2" above or below the required subgrade elevation.

Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2" when tested with a 10' straightedge.

Compaction: After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

BUILDING DRAINAGE COURSE

General: Drainage course consists of placement of drainage fill material, in layers of indicated thickness, over subgrade surface to support concrete building slabs.

Placing: Place drainage fill material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting material during placement operations.

When a compacted drainage course is shown to be 6" thick or less, place material in a single layer.

FIELD QUALITY CONTROL

Quality Control Testing During Construction: Provide soil testing and inspection service for quality control testing during earthwork operations.

The owner has employed Twin Rivers Testing of North Platte, Nebraska; to provide full-time observation and necessary testing during the placement of the controlled structural fill below footings and under building slabs. Testing service shall provide such testing as is necessary during the placement of the structural fill to assure compliance with the contract requirements and shall furnish written certification that the controlled structural fill meets the contract requirements.

The owner shall control and pay for soil testing and inspection services required in connection with placement of the controlled structural fill in building area, drilled pier inspection, and for other soil testing and inspection required on the project. After the actual cost of these services is determined, a change order will be issued adjusting the contract amount accordingly.

Quality Control Testing During Construction: Testing service must inspect and approve all subgrades and fill layers before further construction work is performed thereon. Tests of subgrades and fill layers will be taken as follows:

Controlled Structural Fill in Building Area: Number and type of tests as determined by testing service to assure compliance with the contract requirements.

MAINTENANCE

Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.

Recondition Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.

Settlement: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to watch adjacent work and eliminate evidence of restoration to greatest extent possible.

DISPOSAL OF EXCESS AND WASTE MATERIALS

Removal from Owner's Property: Remove waste materials, including unacceptable excavated material, trash, and debris and dispose of it off the Owner's property.

END OF SECTION 02200

SECTION 02515 - PORTLAND CEMENT CONCRETE PAVING:

PART 1 - GENERAL

SUMMARY

The extent of concrete curbs, walks, and paving is shown on the drawings.

Joint fillers and sealants for concrete curbs, walks, and paving is included as a part of the work in this section.

Related Work Specified Elsewhere:

Prepared subbase is specified in Section 02200.

Concrete and related materials are specified in Division 3.

SUBMITTALS

Manufacturers Data; Joint Fillers and Sealants: Submit manufacturer's specifications, recommendations, and installation instructions for each type of material required.

JOB CONDITIONS

Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

Utilize flagmen, barricades, warning signs, and warning lights as required.

PART 2 - PRODUCTS

MATERIALS

Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.

Use flexible spring steel forms or laminated boards to form radius bends as required.

Coat forms with a non-staining form release agent that will not discolor or deface the surface of the concrete.

Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A 185.

Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 40, unless otherwise indicated.

Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 40, unless otherwise indicated. Cut bars true to length with ends square and free of burrs.

Metal Expansion Caps: Furnish for one end of each dowel bar in expansion joints. Design caps with one end closed and a minimum length of 3" to allow bar movement of not less than 1" unless otherwise indicated.

Concrete Materials: Comply with requirements of Section 03010 for concrete materials, admixtures, bonding materials, curing materials, and others as required.

Pavement and Sidewalk Joint Materials:

One Part, Pourable Elastomeric Sealant:

"Vulkem 45", Maneco International Inc.
"NR-201 Urexpan", Pecora Corp.
"Sonolastic SL-1", Sonneborn Div., Rexford Chem. Prod. Inc.

Modified Liquid Neoprene Paving Sealant: Neoprene-based, 2-part elastomeric sealant, either bituminous modified or plain, as recommended by the manufacturer for the service indicated, complying with FS SS-S-200.

Products offered by manufacturers to comply with the requirements include the following:

"Vulkem 45", Maneco International Inc.
"NR-201 Urexpan", Pecora Corp.
"Sonolastic SL-1", Sonneborn Div., Rexford Chem. Prod. Inc.

Closed-Cell Semi-Rigid Plastic Joint Filler: Provide semi-rigid compressible, non-staining, closed-cell plastic joint filler, recommended by manufacturer where low modulus of elasticity is required, but suitable for retaining concrete.

Products offered by manufacturers to comply with requirements include the following:

Ceramar; W. R. Meadow, Inc.
FF8 Polystyrene; Progress Unlimited, Inc.

CONCRETE MIX, DESIGN AND TESTING

Comply with applicable requirements of Section 03010 - Concrete Work for concrete mix design, sampling and testing, and as herein specified.

Design the mix to produce standard-weight concrete consisting of portland cement, aggregate, air-entraining admixture and water to produce the following properties:

Compressive Strength: 3500 psi, minimum at 28 days.

Slump Range: 2" to 4".

Air Content: 5% to 8%.

PART 3 - EXECUTION

SURFACE PREPARATION

Remove loose material from the compacted subbase surface immediately before placing concrete.

FORM CONSTRUCTION

Set forms to the required grades and line, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of the work and so that forms can remain in place at least 24 hours after concrete placement.

Check completed formwork for grade and alignment to the following tolerances:

Top of forms not more than 1/8" in 10'.

Vertical face on longitudinal axis, not more than 1/4" in 10'.

Clean forms after each use, and coat with form release agent as often as required to ensure separation from concrete without damage.

REINFORCEMENT

Locate, place and support reinforcement as specified in Section 03010.

CONCRETE PLACEMENT

General: Comply with the requirements of Section 03010 for mixing and placing concrete, and as herein specified.

Do not place concrete until subbase and forms have been checked for line and grade. Moisten subbase if required to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

Place concrete using methods which prevent segregation of the mix. Consolidate concrete along the face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.

Deposit and spread concrete in a continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2-hour, place a construction joint.

When adjacent pavement lanes are placed on separate pours, do not operate equipment on the concrete until the pavement has attained sufficient strength to carry the loads without injury.

Curbs and Gutters: Automatic machine may be used for curbs and gutter placement at Contractor's option. If machine placement is to be used submit revised mix design and laboratory test results which meet or exceed minimums specified. Machine placement must produce curbs and gutters to required cross section lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified.

JOINTS

General: Construct expansion, weakened-plane (contraction), and construction joints true-to-line with face perpendicular to surface of the concrete, unless otherwise indicated. Construct transverse joints at right angles to the centerline, unless otherwise indicated.

Weakened-Plane (Contraction) Joints: Provide weakened-plane (contraction) joints, sectioning concrete into areas as shown on the drawings. Construct weakened-plane joints for a depth equal to at least 1/4 concrete thickness using the method indicated below for the type of paving involved.

Tooled Joints: Form weakened-plane joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.

Use tooled joints wherever weakened-plane joints are shown or required in concrete walks.

Sawed Joints: Form weakened-plane joints using powered saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action.

Use sawed joints wherever weakened plane joints are shown or required in concrete drive, concrete walks or paved areas.

Construction Joints: Place construction joints at the end of all pours and at locations where placement operations are stopped for a period of more than 1/2-hour, except where such pours terminate at expansion joints.

Construct joints as shown or, if not shown, use standard metal keyway-section forms.

Where load transfer-slip dowel devices are used, install so that one end of each dowel bar is free to move, as shown on drawings.

Expansion Joints: Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks and other fixed objects, unless otherwise indicated.

Locate expansion joints as indicated on the drawings.

Extend joint fillers full-width and depth of joint, and not less than 1/2" or more than 1" below finished surface where joint sealer is indicated. If no joint sealer, place top of joint filler flush with finished concrete surface.

Furnish joint fillers in one-piece lengths for the full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together.

Protect the top edge of the joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.

Fillers and Sealants:

Use specified fillers and sealants in the following locations:

Use bituminous fiber joint filler for vertical isolation joints between walks and adjacent vertical surfaces, such as columns, walls, backs of curbs, and similar construction.

Use closed-cell semi-rigid plaster joint filler wherever expansion joints are shown in concrete curbs, walks, or paving.

Use modified liquid neoprene paving sealant for all expansion joints and weakened-plane (contraction) control joints in concrete curbs and paving and for expansion joints in concrete walks.

Installation of sealants:

Prime or seal surfaces were shown or recommended by sealant manufacturer.

Install sealants in sidewalks, pavements, and similar surfaces subject to traffic and other abrasion and indentation exposures to a depth equal to 50% of the joint width, but neither more than 1/2" deep nor less than 3/8" deep.

CONCRETE FINISHING

After striking-off and consolidating concrete, smooth the surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust the floating to compare the surface and produce a uniform texture.

After floating, test surface for trueness with a 10' straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.

Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging too, and round to 1/2" radius, unless otherwise indicated. Eliminate any tool marks on concrete surface.

After completion of floating and when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:

On drives and parking areas, provide burlap finish, by drawing a fine-hair broom across concrete surface, perpendicular to line of traffic. Repeat operation if required to provide a fine line texture acceptable to Architect.

On pedestrian walks & approach aprons at building, provide broom finish, by dragging a seamless strip of damp burlap across the concrete, perpendicular to line of traffic. Repeat operation to provide a gritty texture acceptable to Architect.

Do not remove forms for 24 hours after concrete has been place. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Architect.

CURING

Protect and cure finished concrete paving, complying with applicable requirements of Section 03010. Use moist-curing methods for initial curing whenever possible.

REPAIRS AND PROTECTIONS

Repair or replace broken or defective concrete, as directed by Architect.

Drill test cores were directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy resin grout.

Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

Sweep concrete pavement and wash free of stains, discolorations, dirt and other foreign material just prior to final inspection.

END OF SECTION 02515

SECTION 03010 - CONCRETE WORK

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of concrete work is shown on the drawings and includes the following:

Concrete footings and foundation walls.

Concrete slabs-on-grade.

The following types of concrete are required:

"General concrete" work includes all concrete work not indicated to be "architectural concrete".

The following items are included as a part of the work of this section:

Forming for slots, chases, pockets, reglets, depressions, and openings in concrete for the installation of work specified in other sections.

Shoring, bracing, and reshoring of formwork and concrete.

Furnishing and installation of waterstops, dovetail slots, and miscellaneous inserts in concrete.

Installing embedded items in concrete furnished under other sections, such as anchors, anchor slots, supports, hangers, pit frames, etc.

Setting sleeves and leaving blockouts in slabs and walls.

Providing construction joints and control joints in concrete.

Providing joint fillers in concrete.

Curing and protecting concrete.

Observing requirements for hot and cold weather placement of concrete.

Finishing concrete flatwork, floors, slabs, platforms, stairs, and steps.

Sealing and dustproofing treatment of exposed interior concrete floor, platforms, stairs, and steps, where scheduled.

Related Work Specified Elsewhere:

Concrete Curbs, Walks, and Paving: Section 02515.

QUALITY ASSURANCE

Codes and Standards:

Comply with the provisions of the following codes, specifications and standards, except where more stringent requirements are shown or specified:

ACI 301 "Specifications for Structural Concrete for Buildings".

ACI 318 "Building Code Requirements for Reinforced Concrete".

ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures".

ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete".

ACI 347 "Recommended Practice for Concrete Formwork".

Concrete Reinforcing Steel Institute, "Manual of Standard Practice".

Workmanship: The Contractor is responsible for correction of concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes. Correct deficient concrete as directed by the Architect.

Concrete Testing Service: Contractor shall employ a local testing agency to perform quality control testing of concrete cylinder specimens during construction.

SUBMITTALS

Shop Drawings; Concrete Reinforcement: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with the ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required and openings through concrete structures.

Concrete Mix Designs: Submit mix designs for each specified strength of concrete.

PART 2 - PRODUCTS

FORM MATERIALS

Form Contact Faces:

For General Concrete Surfaces: Plywood, 3/4" thick, complying with U.S. Product Standard PS-1 "B-B" (Concrete Form), Class I, Exterior Grade or better. Panel forms and/or proprietary forms are also acceptable.

Form Gaskets and Tapes (for Sealing Form Panel Joints): Closed cell, completely skinned, foam rubber or neoprene, with pressure-sensitive paper-backed adhesive on surfaces to be bonded to forms. Provide materials of sufficient thickness, widths, and compressibility for specific use.

Form Ties: Provide factory fabricated, adjustable-length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.

The type and material of the form ties used in the work shall be determined by the Contractor. However, any system of form ties used in the smooth-finish architectural concrete work shall satisfy all of the following requirements:

The portion of the tie remaining within the concrete after removal of the exterior parts shall be at least 1-1/2" from the outer concrete surface, except if said remaining portion is stainless steel the distance from the outer concrete surface may be reduced to not less than 1".

The form tie hole in the finished surface of the concrete whether formed by wood, plastic, or rubber cones, or removal shall be she-bolts, or removable lag bolts and shall not exceed 3/4 inches in diameter.

Manufacturer: Products offered by manufacturers which comply with the requirements for form ties include the following:

Stainless Steel Sure-Tie System; Dayton Sure-Grip and Shore Co.

1-1/2" Wood Cone Snap-Ty or 1" Wood Cone Stainless Steel Snap-Ty; Richmond Screw Anchor Co.

Corrugated Steel Centering Forms: Provide corrugated steel centering forms fabricated of black steel sheets complying with AISC "Specification for the Design of Light-Gauge Cold-Formed Steel Structures". Unless otherwise indicated, provide centering of 26-gauge steel sheets with 9/16" deep corrugations. Where "heavy-duty" centering is indicated, provide centering of 24-gauge steel sheets with 1-5/16" deep corrugations.

Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces to be cured with water or curing compound.

REINFORCING MATERIALS

Reinforcing Bar: ASTM A 615, and as follows:

Provide Grade 60, except where otherwise shown, for bars No. 3 to 18.

Steel Wire: ASTM A 82, plain, cold-drawn, steel.

Welded Wire Fabric: ASTM A 185, welded steel wire fabric.

Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers, and other devices for spacing supporting and fastening reinforcing bars in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Wood, brick, and other devices will not be acceptable, except that concrete brick may be used to support reinforcing in footings.

For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are hot-dip galvanized or plastic protected or stainless steel protected.

CONCRETE MATERIALS

Portland Cement: ASTM C 150, Type I and Type II.

Use only one brand of each type of cement throughout the project, unless otherwise acceptable to Architect.

Aggregates, Normal-Weight Concrete: Comply with the requirements of State of Nebraska Department of Roads 1997 Standard Specifications for Highway Construction and as herein specified. Do not use aggregates containing soluble salts or other substances such as iron sulphides, pyrite, marcasite, or ochre which can cause stains on exposed concrete surfaces.

Sand-Gravel Aggregate, General Concrete: Mixture of sand and gravel composed of clean, hard, durable, and uncoated particles containing no clay, loam, mud or other foreign matter, and conforming to all requirements listed in Section 1000 of the State of Nebraska Department of Roads 1997 Standard Specifications for Highway Construction.

Fine Aggregate, General Concrete: Clean, sharp, natural sand free from loam, clay, lumps, or other deleterious substances, and conforming to all requirements listed in Section 1000 of the State of Nebraska Department of Roads 1997 Standard Specifications for Highway Construction.

Coarse Aggregate, General Concrete: Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, consisting of crushed limestone and conforming to all requirements listed in Section 1000 of the State of Nebraska Department of Roads 1997 Standard Specifications for the Highway Construction.

Water: Clean, fresh, drinkable.

Air-Entraining Admixture: ASTM C 260.

Water - Reducing Admixture: ASTM C 494, Type A.

RELATED MATERIALS

Flashing at Expansion Joints: Stainless steel, Type 302/304, 20 finish, fully annealed or dead soft temper, 0.015" thick.

Closed-Cell Semi-Rigid Plastic Joint Filler: Provide semi-rigid compressible, non-staining, closed-cell plastic joint filler, recommended by manufacturer where low modulus of elasticity is required, but suitable for retaining concrete.

Products offered by manufacturers to comply with requirements include the following:

Ceramar, W.R. Meadow, Inc.
FF8 Polystyrene; Progress Unlimited, Inc.

Sealants: Install sealants in all isolation and perimeter joints. Refer to 02515 for sealant requirements.

Dovetail Slots: Furnish dovetail slots with filler strips where shown. Fabricate from 24 ga. galvanized steel unless otherwise indicated.

Floor Control Joint Insert: T-shaped plastic insert with detachable to member, depth as required. Provide at mechanical penthouses at third floor and above seventh floor.

Provide one of the following products:

Zip Strip; AA Wire Products Company

Zipcap Control Joint Former; Greenstreak Plastic Products

Moisture Barrier: Provide moisture barrier cover over prepared base material were shown on drawings. Use only materials which are resistant to decay when tested in accordance with ASTM E 154, as follows:

Polyethylene sheet not less than 10 mils thick.

Liquid Curing-Sealing-Dustproofing Compound: Clear transparent curing-sealing compound formulated of special thermoplastic acrylic polymers which cures, seals, hardens, and dustproofs concrete without yellowing.

Products which comply with the requirements for liquid curing-sealing-dustproofing compounds include the following:

Dress & Seal; C & M Construction Chemicals
CS-309; W.R. Meadows
Cure 7 Seal; Symons
Kure-N-Seal; Sonneborn

Absorptive Cover: Burlap cloth made from jute or kenaf, weight approximately 9 oz. per sq. yd., complying with AASHO M 182, Class 3.

Moisture-Retaining Cover: One of the following, complying with ASTM C 171.

Waterproof paper.
Polyethylene film.
Polyethylene-coated burlap.

Non-Membrane Curing Compound: Specially compounded curing agent which combines chemically with the free lime in the concrete and forms a barrier against excessive moisture loss and allows proper bonding of toppings, tiles, and penetration of hardeners; ASTM C 309, Type I.

Provide the following projects:

L & M Cure; L & M Construction Chemicals.

CONCRETE MIXES

Provide the following class of concrete at locations specified below unless shown otherwise on the drawings:

For concrete fill for stairs and floors, interior concrete platforms:
Mix identification SG- 6-1/2:
4000 psi (minimum) @ 28 days
100% sand-gravel aggregate

6.5 sacks of cement per cu. yd. of concrete (minimum)
6.0 gals. of water per sack (94 lbs) of cement (maximum)

For exterior concrete drives, walks, curbs, and paving work, including exterior topping slabs over precast or cast-in-place structural slabs, floor slabs supported by steel framing, interior concrete slabs-on-grade:

Mix identification SG- 6-1/2:
4000 psi (minimum) @ 28 days
100% sand-gravel aggregate
6.5 sacks of cement per cu. yd. of concrete (minimum)
6.0 gals. of water per sack (94 lbs) of cement (maximum)

For footings and grade beams:

Mix Identification L-6:

3000 psi (minimum) @ 28 days
70% fine and 30% coarse (limestone) aggregate
6.0 sacks of cement per cu. yd. of concrete (minimum)
6.0 gals. of water per sack (94 lbs.) of cement (maximum)

For foundation walls and concrete superstructure, including walls, piers, beams:

Mix Identification L - 6-1/2:
4000 psi (minimum) @ 28 days
70% fine and 30% coarse (limestone) aggregate
6.5 sacks of cement per cu. yd. of concrete
6.0 gals. of water per sack (94 lbs.) of cement (maximum)

Admixtures: Use air-entraining admixture in all concrete, unless otherwise indicated. Add air-entraining admixture at the manufacturer's prescribed rate to result in concrete at the point of placement having air content within the following limits:

Concrete structures and slabs exposed to freezing and thawing: 4% to 7% air.

Other Concrete: 2% to 4% air.

Slump Limits: Proportion and design mixes to result in concrete slump at the point of placement as follows:

All Concrete: Not less than 2" and not more than 4", unless approved by Architect. In no case shall the water cement ratio for a concrete mix at the point of placement exceed the specified proportions.

CONCRETE MIXING

Ready-Mix Concrete: Comply with the requirements of ASTM C 94, and as herein specified.

Delete the references for allowing additional water to be added to the batch for material with insufficient slump. Addition of water to the batch will be permitted only if approved by Architect's field representative.

During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

When the air temperature is between 85 degrees F. and 90 degrees, F., reduce the mixing and delivery time from 1-1/2 hours to 75 minutes, and when the air temperature is above 90 degrees F., reduce the mixing and delivery time to 60 minutes.

DESIGN OF FORMWORK

Design, erect, support, brace, and maintain formwork so that it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure. Carry vertical and lateral loads to ground by formwork system and in-place construction that has attained adequate strength for that purpose.

Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operator on formwork, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety to structure during construction.

Limit maximum deflection of form facing material between studs as well as deflection of studs and walers to 1/360 of the span for all concrete.

Design formwork to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials.

Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.

Side forms of footings may be omitted, and concrete placed directly against excavation only when requested by Contractor and accepted by Architect. When forms are omitted, provide additional concrete required beyond the minimum design profiles and dimensions of the footings as indicated.

It is intended that concrete may be placed directly against the sides of the footing excavations providing that such excavations are sharp, clean, and have vertical sides for the required footing depth.

PART 3 - EXECUTION

FORM CONSTRUCTION

General: Construct forms complying with ACI 347, to the sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts and other features required. Use selected materials to obtain required finishes.

Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where the slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and assure ease of removal.

Provide temporary openings in wall forms, column forms and at other locations where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to forms to prevent loss of concrete mortar. Locate

temporary openings on forms in as inconspicuous location as possible, consistent with project requirements.

Form intersecting planes to provide true, clean-cut corners, with edge grain of plywood not exposed as form for concrete.

Place steel centering forms with ribs perpendicular to supports and secure with puddle welds to each support. Space welds at 12" o.c. Provide at least 2" for end laps occurring over supports, and lap sides at least one corrugation.

Falsework: Erect falsework and support, brace, and maintain it to safely support vertical, lateral and asymmetrical loads applied until such loads can be supported by in-place concrete structures.

Provide shores and struts with positive means of adjustment capable of taking up formwork settlement during concrete placing operations, using wedges or jacks or a combination thereof. Provide trussed supported when adequate foundations for shores and struts cannot be secured.

Support form facing materials by structural members spaced sufficiently close to prevent deflection. Fit forms placed in successive units for continuous surface to accurate alignment, free from irregularities and within allowable tolerances.

Provide camber in formwork as required for anticipated deflections due to weight and pressures of fresh concrete and construction loads for longspan members without intermediate supports.

Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce work of required dimensions.

Forms for Exposed Concrete:

General: Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes.

Do not use metal cover plates for patching holes or defects in forms.

Provide sharp, clean corners at intersection planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
Use extra studs, walers and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material which will produce bow.

Assemble forms so they may be readily removed without damage to exposed concrete surfaces.

Form molding shapes, recesses and projections with smooth-finish materials, and install in forms with sealed joints to prevent displacement.

Form Ties: Provide form ties of sufficient strength, located so as to resist all forces.

For General Concrete: Locate at Trade Contractor's option.

Corner Treatment: Form exposed corners of beams and columns to produce square, smooth, solid, unbroken lines. Unless otherwise directed

Unexposed corners may be formed either square or chamfered.

Reuse of Forms: Forms may be reused only when properly maintained and, in a condition, satisfactory to the Architect. Forms which cannot be tightly butted and made watertight shall not be reused. If reuse of forms if approved by Architect, clean forms and repair damaged surfaces by replacement of damaged sheets.

Cleaning and Coating of Forms: Prior to placing of reinforcing steel, clean all form contact faces and coat form contact faces uniformly with one coat of specified form release coating per manufacturer's written instructions. Remove excess form coating and do not allow coating to meet previously placed concrete against which fresh concrete will be placed.

Observation of Forms: Notify Architect at least twenty-four hours in advance of placing concrete.

Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

PLACING REINFORCEMENT

Comply with the specified codes and standards, and Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.

Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

Place reinforcement to obtain at least the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

Do not place reinforcing bars more than 2" beyond the last leg of continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.

Install welded wire fabric in sheets. Rolled stock is not permitted. Lap adjoining pieces at lease one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

JOINTS

Construction Joints: Locate and install construction joints, which are not shown on the drawings, so as not to impair the strength and appearance of the structure, as acceptable to the Architect.

Provide keyways at least 1-1/2" deep in all construction joint in walls, slabs and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.

Place construction joints perpendicular to the main reinforcement. Continue all reinforcement across construction joints.

Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs on ground at all points of contact between slabs on ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.

Control Joints in Slabs-on-Ground: Construct control joints in slabs-on-ground to form panels of patterns as shown. Make joints 1/4 of the slab depth unless otherwise shown.

Form control joints by inserting a premolded plastic insert into the fresh concrete until the bottom of the top member of the strip is in contact with the slab surface. After the concrete has cured, remove the top member of the joint former insert.

INSTALLATION OF EMBEDDED ITEMS

General: Set and build into the work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of the items to be attached thereto.

Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain the required elevations and contours in the finished slab surface. Provide and secure units sufficiently strong to support the types of screed strips by the use of strike-off templates or accepted compacting type screeds.

SHORES AND SUPPORTS

Comply with ACI 347 for shoring and reshoring in multistory construction, and as herein specified.

Extend shoring from ground to roof for structures 4 stories or less, unless otherwise permitted. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space out shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimum if required to ensure the proper distribution of loads throughout the structure.

Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to safely support the work without excessive stress or deflection.

Keep reshores in place a minimum of 15 days after placing upper tier, and longer if required, until the concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

PREPARATION OF FORM SURFACES

Coat the contact surfaces of forms with a form-coating compound before reinforcement is placed.

Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of the form-coating compound manufacturer's directions. Do no allow excess form-coating material to accumulate in the

forms or to meet concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
Coat steel forms with a nonstaining, rust preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

CONCRETE PLACEMENT

Preplacement Inspection: Before placing concrete, inspect the formwork installation, reinforcing steel and items to be embedded or cast-in. Notify other crafts to permit the installation of their work, as required. Thoroughly wet wood forms immediately before placing concrete, as required where form coatings are not used.

Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.

General: Comply with ACI 304, and as herein specified.

Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation due to rehandling or flowing.

Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

Arrange placement equipment so that concrete has an unrestricted vertical drop into the center of the container or form receiving it. Do not allow the stream of concrete to be separated by permitting it to fall freely over rods, spacers, reinforcement, or other embedded materials. Use hoppers, chutes, or tremies where required to deposit concrete.

Consolidate placed concrete by mechanical vibrating equipment supplemented by handspading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with the recommended practices of ACI 309, to suit the type of concrete and project conditions.

Do not begin concrete placing operations without at least two spare vibrators on the jobsite and in working order, in addition to those assigned to each placing crew.

Do not use vibrators to transport concrete inside of forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate the placed layer of concrete and at least 6" into the preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit the duration of vibration to the time necessary to consolidate the concrete and complete embedment of reinforcement and other embedded items without causing segregation of the mix.

Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within the limits of construction joints, until the placing of a panel or section is completed.

Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

Bring slab surfaces to the correct level with a straightedge and strikeoff. Use bull floats or darbies to smooth the surface, leaving it free of humps or hollows. Do not sprinkle water on the plastic surface. Do not disturb the slab surfaces prior to beginning finishing operations.

Maintain reinforcing in the proper position during concrete placement operations.

Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.

When air temperature has fallen to or is expected to fall below 40 degrees F., uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 50 degrees F., and not more than 80 degrees F. at point of placement.

Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

Hot Weather Placing: When hot weather conditions exist that would seriously impair the quality and strength of concrete, place concrete in compliance with ACI 305.

FINISH OF FORMED SURFACES

Rough Form Finish: Provide as-cast rough form finish for formed concrete surfaces not exposed-to-view in the finish work or concealed by other construction, unless otherwise indicate. This is the concrete surface having the texture imparted by the form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding rubbed down or chipped off.

Smooth Form Finish: Provide as-cast smooth form finish for formed concrete surfaces exposed-to-view, that are to be covered with coating material applied directly to the concrete, or a covering material applied directly to the concrete, or a covering material bonded to the concrete, such as waterproofing, dampproofing, painting, or other similar system or are to receive abrasive blast finish. This is the as-cast concrete surface as obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with all fins or other projections completely removed and smoothed.

Related Unformed Surfaces: At tops of walls, horizontal offsets and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise shown.

MONOLITHIC SLAB FINISHES

Float Finish: Apply float finish to monolithic slab surfaces that are to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise shown on drawings or in schedules.

After screeding and consolidating concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit 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. Check and level surface plane to a tolerance not exceeding 1/4" in 10' when tested with a 10' straight edge. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

Trowel Finish: Apply trowel finish to monolithic slab surfaces that are to be exposed-to-view, unless otherwise shown, and slab surfaces that are to be covered with resilient flooring, paint or other thin film finish coating system.

After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with a surface plan tolerance of Floor Flatness of 20 (min value of 17) and the Floor Levelness of 20 (minimum value of 15) per ACI manual of Concrete Practice in service garage building and office area. Slope per drawings at locations of sloping draining floor. Grind smooth surface defects which would telegraph through floor system.

Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps and ramps, and elsewhere as shown on drawings or in schedules.

Immediately after trowel finishing, slightly roughen concrete surface by brooming with concrete broom perpendicular to main traffic route. Coordinate required final finish with the Construction Manager before application.

CONCRETE CURING AND PROTECTION

General: Protect freshly placed concrete from premature drying and excessive cold or hot temperature and maintain without drying at a relatively constant temperature for a period of time necessary for hydration of cement and proper hardening.

Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting; keep continuously moist for not less than 72 hours.

Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

Curing Methods: Perform curing of concrete by moist curing, by moisture-retaining cover curing, by nonmembrane curing, by liquid curing-sealing-dustproofing treatment, and by combinations thereof, as herein specified.

Provide moisture curing by following methods:

Keep concrete surface continuously wet by covering with water.
Continuous water-fog spray.

Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.

Provide moisture-cover curing as follows:

Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

Provide non-membrane curing to slabs as follows:

Apply non-membrane curing compound to concrete surfaces as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas which are subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

Provide liquid-curing-sealing-dustproofing treatment to floor slabs were shown on the drawings or in the schedules. (Typically, floors that do not receive floor finish.)

Apply liquid curing-sealing-dustproofing compound with 2-coat application by spray, roller, or lambs' wool applicator at manufacturer's recommended rates immediately after final troweling. Apply final coat of compound after completion of construction and final clean-up.

Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of the appropriate curing compound.

Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.

REMOVAL OF FORMS

Contractor shall determine time at which forms may be removed without endangering the structure, subject to the following limitations and the Architect's approval:

Walls, Beam Sides, and Columns: Two days minimum and when concrete has attained at least 1,800 psi compressive strength. If necessary, verify strength with test cylinders at Contractor's expense.

Beam Bottoms and Slabs: When concrete has attained at least 70% of its specified 28-day compressive strength, verify strength with test cylinders at Contractor's expense.

Carefully loosen complete section of forms, which can be removed, without exerting pressure or stresses against corners, offsets, or reveals. Carefully remove form ties. Prying against architectural or exposed concrete surface with tools of any description is not permitted. Protect all sharp edges of concrete and in general maintain integrity of design.

Reshoring: Immediately after removal of forms, fully reshore all slabs and beams used to support shores for upper slabs to at least three floors below. Leave reshores in place until the concrete has reached its specified 28-day compressive strength. Verify strength with test cylinders at Contractor's expense.

MISCELLANEOUS CONCRETE ITEMS

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

Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.

Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of the manufacturer furnishing machines and equipment.

Steel Pans Stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp and finish concrete surfaces as scheduled.

CONCRETE SURFACE REPAIRS

Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, but only when acceptable to Architect.

> Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Before placing cement mortar or proprietary patching compound, thoroughly clean, dampen with water and brush-coat the area to be patched with neat cement grout, or proprietary bonding agent.

For exposed-to-view surfaces including the holes, blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins, and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

Repair concealed formed surfaces, where possible, that contain defects that adversely affect the durability of the concrete. If defects cannot be repaired, remove and replace the concrete.

Repair of Unformed Surface: Test unformed surfaces, such as monolithic slabs, for smoothness and to verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having required slope.

Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days. If exposed grind complete surface.

Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete in complete panel, i.e. way to wall or control joint. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to the Architect.

Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete, and brush with a neat cement grout coating or concrete bonding agent. Mix patching concrete of same materials to provide concrete of the same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.

Repair isolated random cracks and single holes not over 1" in diameter by drypack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, direct, and loose particles. Dampen cleaned concrete agent. Mix dry-pack, consisting of one-part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched areas continuously moist for not less than 72 hours. This method not acceptable in exposed concrete floors.

Repair methods not specified above may be used, subject to acceptance of Architect.

QUALITY CONTROL TESTING DURING CONSTRUCTION

Provide sampling and testing for quality control testing of concrete during construction as follows:

Slump: ASTM C 143; provide one test for each set of compressive strength test specimens.

Air Content: ASTM C 231 pressure for normal weight concrete; one for each set of compressive strength specimens.

Compressive Strength Tests: ASTM C 39; provide one of 3 cylinders for each 100 cu. yds. or fraction thereof, of each concrete class placed in any one day; 1 specimen tested at 7 days, 1 specimen tested at 28 days, and 1 specimen retained in reserve for later testing if required.

Test results will be reported in writing to the Contractor, Construction Manager and Architect. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in the structure, compressive breaking strength and type of break for both 7-day tests and 28-day tests.

Additional Tests: The testing service will make additional tests of in-place concrete when test results indicated the specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Architect. The testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Trade Contractor shall pay for such tests conducted, and any other additional testing as may be required, when acceptable concrete is verified.

END OF SECTION 03010

SECTION 06100 - CARPENTRY

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of the carpentry work is shown on drawings and in schedules.

The types of carpentry work specified in this section include (but are not necessarily limited to) the following:

Wood furring.
Wood grounds, nailers, and blocking.
Wood framing.
Plywood sheathing.

QUALITY ASSURANCE

Lumber Standard: Comply with PS 20.

Plywood Standard: Comply with PS 1.

Factory-mark each piece of lumber and plywood with type, grade, mill, and grading agency, except omit marking from surface to be exposed with transparent finish or without finish.

Hazardous Materials: Products furnished under this section shall not contain UREA formaldehyde or other known hazardous materials.

PRODUCT HANDLING

Deliver and Storage: Keep materials always dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood and provide air circulation within stacks.

JOB CONDITIONS

Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow proper attachment of other work.

PART 2 - PRODUCTS

MATERIALS

Lumber, General:

Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

Provide dressed lumber, S4S, unless otherwise indicated.

Provide seasoned lumber with 19% maximum moisture content at time of dressing.

Framing Lumber (2" through 4" thick):

For light framing (less than 6" wide), provide "Stud" grade lumber for stud framing and "Standard" grade for other light framing, any species.

For structural framing (6" and wider and from 2" to 4" thick), provide the following grade and species: No. 2 Grade Mountain Hemlock-Hem Fir (WCLB or WWPA).

Blocking and Nailers for Roofing Work: Provide wood blocking, nailers, and curbs associated with roof construction of the sizes shown, worked to shapes indicated and as follows:

Moisture Content: 15% maximum for lumber items not specified to receive wood preservative treatment.

Grade and Species: One of the following:

Merchantable Grade (RIS) Redwood or No. 2 Grade (WWPA) Western Red Cedar.

No. 2 Grade (WCLB or WWPA) Mountain Hemlock or Hem-Fir pressure treated with water-bourne preservatives complying with American Wood Preservative Bureau AWPB LP-2.

Plywood:

Exposed Plywood: Where plywood will be exposed in finished work, provide the following:

Where painted finish is indicated, provide MDO/EXT-APA plywood with Medium Density Overlay face exposed and Grade C concealed, for both exterior and interior use.

Concealed Plywood: Where plywood will be concealed by other work, provide C-D Plugged/EXT-APA.

For plywood sheathing and subflooring, provide exterior glue.

For floor underlayment, provide UNDERLAYMENT/INT-APA. Provide fully sanded finish where resilient or fluid-applied finish flooring (if any) is indicated.

For combination subfloor-underlayment, provide 2.4.1./INT-APA.

Particleboard Underlayment: Provide particleboard complying with the requirements of NPA "Physical Property Specification for Mat Formed Wood Particleboard for Floor Underlayment".

Fiberboard Sheathing: Provide fiberboard sheathing, ASTM C 208, 25/32" thick, 4' wide x 8' or 9' long panels with square edges.

Miscellaneous Materials:

Fasteners and Anchorages: Provide size and type as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers, and anchoring devices.

Building Paper: Asphalt saturated felt, non-perforated, ASTM D 226.

PART 3 - EXECUTION

INSTALLATION

General:

Discard units of material with defects which might impair quality of work, and units which are too small to fabricate work with minimum joints or optimum joint arrangement.

Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.

Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

Wood Grounds, Nailers, Blocking and Sleepers:

Provide wherever shown and where required for screening or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

Wood Furring:

Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.

Furring to Receive Gypsum Drywall: Unless otherwise shown, provide 2" x 2" furring at 16" o.c., vertically.

Suspended Furring: Provide size and spacing shown, including hangers and attachment devices. Level to a tolerance of 1/8" in 10', except 1/4" in 10' for thick-coat plaster work.

Wood Framing, General:

Provide framing members of sizes and on spacings shown, and frame openings as shown, or if not shown, comply with recommendations of "Manual for House Framing" of National Forest Products Association. Do not splice structural members between supports.

Anchor and nail as shown, and to comply with "Recommended Nailing Schedule" of "Manual for House Framing" and other recommendations of the N.F.P.A.

Firestop concealed spaces with wood blocking not less than 2" thick, if not blocked by other framing members. Provide blocking at each building story level and at ends of joist spans.

Stud Framing:

General: Provide stud framing where shown. Unless otherwise shown, use 2" x 6" wood studs spaced 16" o.c. with 6" face perpendicular to direction of wall or partition. Provide single bottom plate and double-top plates 2" thick by width of studs, except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction.

Construct corners and intersections with not less than 3 studs. Provide miscellaneous blocking and framing as shown and as required for support of facing materials, fixtures, specialty items and trim.

Provide continuous horizontal blocking row at mid-height of single-story partitions over 8' high and at midpoint of multi-story partitions, using 2" thick members of same width as wall or partitions.

Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs.

For non-bearing partitions, provide double jamb studs and headers not less than 4" deep for openings 3' and less in width, and not less than 6" deep for wider openings.

For load-bearing partitions provide double-jamb studs for openings 6' and less in width, and triple-jamb studs for wider openings. Provide headers of depth shown, or if not shown, provide as recommended by N.F.P.A. "Manual for House Framing."

Provide diagonal bracing in stud framing of exterior walls, except as otherwise indicated. Brace both walls at each external corner, full story height, at a 45-degree angle, using either a let-in 1 x 4 or 2 x 4 blocking.

Joist Framing:

General: Provide framing of sizes and spacing shown. Install with crown edge up and support ends of each member with not less than 1-1/2" of bearing on wood or metal, or 3" on masonry. Attach to wood bearing members by toe nailing or metal connectors; frame to wood supporting members with wood ledgers as shown, or if not shown, with metal connectors. Fire-cut members built into masonry (if any). Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 4'. Do not notch in middle third of joists; limit notches to 1/6 depth of joist, 1/3 at ends. Do not bore holes larger than 1/3 depth of joist or locate closer than 2" from top or bottom. Provide solid blocking (2" thick by depth of joist) at ends of joists unless nailed to header or band member.

Lap members framing from opposite sides of beams, girders, or partitions not less than 4" or securely tie opposing members together. Provide solid blocking (2" thick by depth of joist) over supports.

Anchor masonry bearing members with 1/4" x 1-1/4" metal strap or "T" anchors with wall ends bent 4" at every second joist. Extend anchors not less than 1'-4" along bottom of joist end and nail.

Anchor members paralleling masonry with 1/4" x 1-1/4" metal strap anchors spaced not more than 8' o.c. Extend anchors at least 4" into masonry, turn up 4" and extend over and fasten to 3 joists.

Under jamb studs at openings, provide solid blocking between joists.

Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.

Provide triple-joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures, unless otherwise shown.

Provide bridging between joists where nominal depth-to-thickness ratio exceeds 4, at intervals of 8'. Use bevel cut 1" x 4" or 2" x 3" wood bracing, double-crossed and nailed both ends to joists, or use solid wood bridging 2" thick by depth of joist, end nailed to joist.

Stair Framing: Provide stair framing with 3 stair stringers for each set of stairs, unless otherwise shown. Cut notches to receive exact size of treads and risers (if any) shown, with not change in dimensions between landings. Provide stringers of size shown, or if not shown, of a size to allow not less than 3-1/2" of effective depth after notching.

Installation of Plywood:

Comply with recommendations of the American Plywood Association (APA), for the installation of plywood. Sheathing and Subflooring: Install as recommended by APA for spacing of supports or types of substrates involved in the work. Provide thickness shown, or if not shown, provide thickness recommended by APA.

Provide plywood underlayment where shown. Install underlayment just prior to laying of finish flooring. Stagger end joints between panels in relation to each other and all joints in relation to substrate jointing. Allow 1/32" space between panel ends and edges for expansion and contraction. Nail or staple in accordance with APA recommendations. Prior to installation of finish flooring, fill damaged areas wider than 1/16", set nails 1/16" or staples 1/32", but do not fill; sand rough areas and offsets smooth.

For combinations subfloor-underlayment, comply with above, to the extent possible, with ends staggered over supports.

Particleboard Underlayment: Install in accordance with the recommendations of the National Particleboard Association (NPA) for the type of subfloor involved in work. Fasten to subflooring in accordance with NPA recommendations. Fill and sand gouges, gaps and chipped edges. Sand uneven joints flush.

Nail underlayment to subflooring.
Nail or staple underlayment to subflooring.
Glue-nail underlayment to subflooring.

Fiberboard Sheathing: Install 4' x 8' longer sheathing vertically, with long edges parallel to and centered over studs. Provide solid wood blocking wherever end joints do not bear against framing sills or plates. Allow 1/8" open space between edges and ends of adjacent units. Stagger horizontal joints, if any. Nail to each support in accordance with manufacturers recommended spacing, but space fasteners not more than 3" o.c. around perimeter at edge and end supports and 6" o.c. at intermediate supports.

END OF SECTION 06100

SECTION 06192 – PREFABRICATED WOOD TRUSSES

PART 1 - GENERAL

SUMMARY

Extent of configuration of prefabricated wood trusses is indicated on drawings.

Types of prefabricated wood trusses include:

Pre-Engineered wood trusses

Roof sheathing is specified in Division-6 section "Rough Carpentry" and in the “General Notes” on the Plans.

DEFINITIONS

Prefabricated wood trusses include planar structural units consisting of metal plate connected members which are fabricated from dimension lumber, and which have been cut and assembled prior to delivery to the project site.

SUBMITTALS

Product Data: Submit fabricator's technical data covering lumber, metal plates, hardware, fabrication process, treatment (if any), handling and erection.

Submit certificate, signed by an officer of fabricating firm, indicating that trusses to be supplied for project comply with indicated requirements.

Submit certification by treating plant that required fire-retardant treatment complies with specified standard and other requirements, and by metal connector plate manufacturer that fire-retardant formulation is approved for use with plates for truss exposure indicated.

Shop Drawings: Submit shop drawings showing species, sizes, and stress grades of lumber to be used; pitch, span, camber, configuration and spacing for each type of truss required; type, size, material, finish, design values, location of metal connector plates; and bearing and anchorage details.

To the extent engineering design considerations are indicated as fabricator's responsibility, submit design analysis and test reports indicating loading, section modulus, assumed allowable stress, stress diagrams and calculations, and similar information needed for analysis and to ensure that trusses comply with requirements.

Provide shop drawings which have been signed and stamped by a structural engineer licensed to practice in the jurisdiction where trusses will be installed.

QUALITY ASSURANCE

TPI Standards: Comply with applicable requirements and recommendations of the following Truss Plate Institute (TPI) publications:

"Design Specification for Metal Plate Connected Wood Trusses".

"Design Specification for Metal Plate Connected Parallel Chord Wood Trusses".

"Commentary and Recommendations for Handling and Erecting Wood Trusses".

"Commentary and Recommendations for Bracing Wood Trusses".

"Quality Standard for Metal Plate Connected Wood Trusses".

Wood Structural Design Standard: Comply with applicable requirements of "National Design Specification for Wood Construction" published by N.F.P.A.

Design by Manufacturer: Trusses shall be designed by Connector-plate manufacturer to support all superimposed dead and live loads indicated, with design approved and certified by a structural engineer licensed to practice in the jurisdiction where trusses will be installed.

Connector Plate Manufacturer's Qualifications: Provide truss connector plates manufactured by a firm which is a member of TPI, and which complies with TPI quality control procedures for manufacture of connector plates published in TPI "Quality Standard for Metal Plate Connected Wood Trusses".

Fabricator's Qualifications: Provide trusses by a firm which has a record of successfully fabricating trusses similar to type indicated and which complies with the following requirements for quality control:

Fabricator participates in TPI "Quality Assurance Inspection Program" as a licensee authorized to apply TPI marks to trusses.

Fabricator practices a quality control program which complies with, or is comparable to, one published in TPI "Quality Standard for Metal Plate Connected Wood Trusses" and which involves inspection by an independent inspection and testing agency acceptable to Architect and authorities having jurisdiction.

Single Source Responsibility for Connector Plates: Provide metal connector plates from a single manufacturer.

DELIVERY, STORAGE, AND HANDLING

Handle and store trusses with care, and in accordance with manufacturer's instructions and TPI recommendations to avoid damage from bending, overturning or other cause for which truss is not designed to resist or endure.

Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying work of other trades whose work must follow erection of trusses.

PART 2 - PRODUCTS

LUMBER

Factory mark each piece of lumber with type, grade, mill, and grading agency.

Lumber Standard: Manufacturer lumber to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

Inspection Agencies: Inspection agencies and the abbreviations used to reference them to lumber grades and species include the following:

NLGA - National Lumber Grades Authority (Canadian).
SPIB - Southern Pine Inspection Bureau.
WCLIB - West Coast Lumber Inspection Bureau.
WWPA - Western Wood Products Association.

Nominal sizes are indicated, except as shown by detailed dimensions.

Provide lumber manufactured to actual sizes required by PS 20 to comply with requirements indicated below:

Dressed, S4S, unless otherwise indicated.

Moisture Content: Seasoned, with 19 percent maximum moisture content at time of dressing and shipment for sizes 2" or less in nominal thickness, unless otherwise indicated.

Grade: As required to meet “General Notes” on structural plans

Species: As required to meet “General Notes” on structural plans
Stress-Rating Method: Visually graded or machine stress-rated.

Design Values: As indicated on drawings.

METAL CONNECTOR PLATES, FASTENERS AND ANCHORAGES

Connector Plates: Fabricate connector plates from metal complying with the following requirements:

Hot-Dip Galvanized Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A 446, Grade a; zinc coated by hot-dip process to comply with ASTM A 525, Designation G60; minimum coated metal thickness indicated but not less than 0.036".

Electrolytic Zinc-Coated Steel Sheet: Structural (physical quality steel sheet complying with ASTM A 591, Coating Class C, and, for structural properties, with ASTM A 446, Grade A; zinc-coated by electro-deposition; with minimum coated metal thickness indicated not less than 0.047".

Aluminum-Zinc Alloy-Coated Steel Sheet: Structural (physical quality steel sheet complying with ASTM A 792, Coating Designation AZ 50, and, for structural properties, with ASTM A 446, Grade A; aluminum-zinc alloy-coated by hot-dip process; with minimum coated metal thickness indicated but not less than 0.036".

Stainless steel sheet complying with ASTM A 167 and, for structural properties, with ASTM A 446, Grade A; with minimum metal thickness indicated but not less than 0.035".

Any metal indicated above.

Fasteners and Anchorages: Provide size, type, material, and finish indicated for nails, screws, bolts, nuts, washers, and other anchoring devices.

WOOD TREATMENT

Fire-Retardant Treatment: Where fire-retardant treated wood ("FRTW") is required for trussed, pressure impregnate lumber with fire-retardant chemicals to comply with AWPA C20 for treatment type indicated below and identify treated material with appropriate classification marking of Underwriters Laboratory, Inc., or other testing and inspection agency acceptable to authorities having jurisdiction. Use treatment type approved by metal connector plate manufacturer as being non-corrosive to metal connector plates for application indicated.

Interior Type A: Use where "FRTW" wood is indicated for interior applications.

Exterior Type: Use where "FRTW" wood is indicated for exterior, exposed applications.

Inspect each piece of treated lumber after drying and discard damaged or defective pieces.

FABRICATION

Cut truss members to accurate lengths, angles and sizes to produce close fitting joints with wood-to-wood bearing in assembled units.
Fabricate metal connector plates to size, configuration, thickness and anchorage details required for types of joint designs indicated.

Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly with close fitting joints. Position members to produce design camber indicated.

Connect truss members by means of metal connector plates accurately located and securely fastened to each side of wood members by means indicated or approved.

PART 3 - EXECUTION

INSTALLATION

General: Erect and brace trusses to comply with recommendations of manufacturer and the Truss Plate Institute.

Erect trusses with a plan of truss webs vertical (plumb) and parallel to each other, located accurately at design spacings indicated.

Hoist units in place by means of lifting equipment suited to sizes and types of trusses required, applied at designated lift points as recommended by fabricator, exercising care not to damage truss members or joints by out-of-plan bending or other causes.

Provide temporary bracing as required to maintain trusses plumb, parallel and in location indicated, until permanent bracing is installed.

Anchor trusses securely at all bearing points to comply with methods and details indicated.

Install permanent bracing and related components to enable trusses to maintain design spacing, withstand live and dead loads including lateral loads, and to comply with other indicated requirements.

Do not cut or remove truss members.

END OF SECTION 06192

SECTION 06200 - FINISH CARPENTRY

PART 1 - GENERAL

DESCRIPTION OF WORK

Definition: Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections. Types of finish carpentry work in this section include:

Interior running and standing trim.

Finish hardware and wood doors are specified in section within Division 8.

Architectural woodwork is specified in another section within Division 6.

QUALITY ASSURANCE

Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to receive transparent finish, and submit mill certificate that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

PRODUCT DELIVERY, STORAGE AND HANDLING

Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

Do not deliver finish carpentry materials, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

JOB CONDITIONS

Conditioning: Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install finish carpentry until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

Maintain temperature and humidity in installation areas as required to maintain moisture content of installed finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

HAZARDOUS MATERIALS

No product furnished under this specification section shall contain UREA formaldehyde or other known hazardous materials.

PART 2 - PRODUCTS

WOOD PRODUCT QUALITY STANDARDS

Softwood Lumber Standards: Comply with PS 20 and with applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

Plywood Standard: Comply with PS 1.

Hardwood Lumber Standard: Comply with National Hardwood Lumber Association (NHLA) rules.

Hardwood Plywood Standard: Comply with PS 51.

Woodworking Standard: Where indicated for a specific product comply with specified provision of the following:

Architectural Woodwork Institute (AWI) "Quality Standards."

Glued-up Lumber Standard: Comply with PS 56.

MATERIALS

General:

Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes as required by PS 20 or to actual sizes and pattern as shown, unless otherwise indicated.

Moisture Content of Softwood Lumber: Provide kiln-dried (KD) lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

Moisture Content of Hardwood Lumber: Provide kiln-dried (KD) lumber having a moisture content from time of manufacture until time of installation within the ranges required in the referenced woodworking standard.

Lumber of Transparent Finish: Use pieces made of solid lumber stock.

Lumber for Painted Finish: At Contractor's option, use pieces which are either glued-up lumber or made of solid lumber stock.

For exterior finish carpentry work use glued-up lumber complying with PS 56 for "wet use" and certified so by respective grading and inspecting agency for species and product indicated.

Exterior Finish Carpentry:

Standing and Running Trim for Transparent Finish: Clear All Heart Redwood (RIS), for boards, worked products and dimension lumber.

Standing and Running Trim for Painted Finish: Select Heart Redwood (RIS), or Clear Heart Western Red Cedar (WWPA or WCLB) for boards, worked products, and dimension lumber 2" and thinner in nominal thickness.

Plywood for Painted Finish: Any softwood species, Exterior type, Medium Density Overlay (MDO/EXT-APA), of thickness indicated.

Interior Finish Carpentry:

Standing and Running Trim for Transparent Finish: Plain Sawn Red Oak manufactured to sizes and pattern's (profile) shown from selected First Grade lumber (NHLA); complying with following grade requirements of referenced woodworking standard, for quality of materials and manufacture.

Grade: Custom.

Casing style: Bayer Built Profile Casing 132A Red Oak 11/16” x 3-1/4” or approved equal.

Miscellaneous Materials:

Fasteners and Anchorages: Provide nails, screws and other anchoring devices of the proper type, size, material and finish for application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.

Where finish carpentry is exposed on exterior or in areas of high relative humidity, provide fasteners and anchorages with a hot-dipped zinc coating (ASTM A 153).

PART 3 - EXECUTION

PREPARATION

Condition wood materials to average prevailing humidity conditions in installation areas prior to installing.

Backprime lumber for painted finish exposed on the exterior or, where indicated, to moisture and high relative humidities on the interior. Comply with requirements of section on painting within Division 9 for primers and their application.

INSTALLATION

Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacture with respect to surfaces, sizes or patterns.

Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and with 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.

Skilled Carpenters: use only carpenters skilled in finish carpentry for installation.

Scribe and cutwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, to produce tight fitting joints with full surface contact throughout length of joint. Use scarf joints for end-to-end joints.

Make exterior joints water-resistant by careful fitting.

Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use find finishings nail for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated.

ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

Repair damaged and defective carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

Clean finish carpentry work on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

Refer to Division 9 sections for final finishing of installed finish carpentry work.

Protection: Installer of finish carpentry work shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 06200

SECTION 07221 - PERIMETER AND UNDER-SLAB INSULATION

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of each type of insulation work required on foundation walls, under slabs-on-grade and similar locations is shown on the drawings.

The applications of perimeter and under-slab insulation include the following:

Insulation on foundation walls.
Insulation under perimeter areas of on-grade floor slabs.

QUALITY ASSURANCE

Thermal Conductivity: The thicknesses shown are for the thermal conductivity (k-value at 75 degrees F) specified for each material. Provide adjusted thicknesses as directed for the equivalent use of material having a different thermal conductivity.

SUBMITTALS

Manufacturer's Data; Perimeter and Under-Slab Insulation: Submit manufacturer's product data and installation instructions for each type of insulation required. Include data substantiating that materials comply with specified requirements.

PRODUCT HANDLING

Protection from Deterioration: Do not allow insulation materials to become wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

Protect plastic insulation from exposure to sunlight.

Fire Hazard: Do not delivery plastic insulation materials to the project site ahead of installation time. Always protect against ignition. Complete installation and concealment of plastic materials as rapidly as possible in each area of work.

JOB CONDITIONS

Do not proceed with the installation of insulation on walls or under slabs until the work which follows (and which conceals the insulation) is scheduled to follow immediately.

PART 2 - PRODUCTS

MATERIALS

Extruded Polystyrene Plastic Board Insulation: Rigid, closed-cell, expanded polystyrene insulation board with integral high-density skin; complying with FSHH-I-524C, Type IV, 25 psi compressive strength; 1.1 perm per inch maximum vapor transmission; thermal conductivity (k-value at 75 degrees F) 0.20; manufacturer's standard lengths and widths.

Provide "Styrofoam SM," by Dow Chemical U.S.A. or Foamular 250 by U.C. Industries.

Protection Course Board: Rigid or semi-rigid asphalt/fiber composition board, 1/8" inch thick, formed under heat and pressure, standard sizes.

Urethane Board Insulation: Rigid, closed-cell, polyurethane expanded foam insulation board, FS HH-I-530, Type I, Grade 2, aged K-value of 0.17 max. (aged at 50% R.H. and 73 degrees F/23 degrees C for 180 days); manufacturer's standard lengths and widths.

Board Faces: Unfaced.

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Apache Bldg. Products Co.; Linden, N.J.
Celotex Corp.; Tampa, FL
CPR Div./Upjohn; Torrance, GA
GAF Corp.; New York, NY
Owens-Corning Fiberglas Corp./Toledo, OH

PART 3 - EXECUTION

INSTALLATION

Comply with manufacturer's instructions for the conditions of installation in each case. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for specific recommendations before proceeding with the work.

Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove concrete/mortar projections which interfere with placement.

Apply a single layer of insulation of the required thickness, unless otherwise shown or required to make up the total required thickness.

On vertical surfaces, where shown and where temporary support is required before backfilling, set units in adhesive applied in accordance with manufacturer's instructions. Use type adhesive recommended by manufacturer of insulation.

Protect insulation on vertical surfaces (from damage during backfilling) by application of protection course boards, set in adhesive in accordance with the recommendations of the manufacturers of the insulation and the protection course boards.

Protect top surface of horizontal insulation (from damage during concrete work) by application of protection course boards.

END OF SECTION 07221

SECTION 07224 - BUILDING INSULATION

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of each type of general building insulation work is shown on the drawings, by the generic name or by its abbreviation.

The following applications of building insulation are required:

Batt rolled insulation.

The work in this section includes the application of a polyethylene film vapor barrier behind the interior finish construction of all exterior walls and ceilings.

Related work specified elsewhere:

Perimeter and under slab insulation: Section 07221.

QUALITY ASSURANCE

Fire and Insurance Ratings: Comply with fire-resistance and flammability ratings as shown and specified; and comply with governing regulations as interpreted by authorities.

Thermal Conductivity: The thicknesses shown are for the thermal conductivity (k-value at 75 degrees F.) specified for each material. Provide adjusted thicknesses as directed for the equivalent use of material having a different thermal conductivity.

SUBMITTALS

Manufacturer's Data, Building Insulation: Submit manufacturer's specifications and installation instructions for each type of insulation required. Include data substantiating that materials comply with specified requirements.

PRODUCT HANDLING

Protection from Deterioration: Do not allow insulation materials to become wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage, and protection during installation.

PART 2 - PRODUCTS
MATERIALS

Extruded Polystyrene Plastic Board Insulation: Rigid, closed-cell, extruded polystyrene insulation board complying with ASTM C578, Type IV; 40 psi compressive strength; 1.0 perm-inch maximum vapor transmission; 0.7% maximum water absorption; manufacturer's standard lengths and widths.

Self-Skinned Board: Where not otherwise indicated, provide "Styrofoam SM," by Dow Chemical U.S.A., thermal resistivity (R-value at 75 degrees F.) of 5.0 or "Amo Foam" by Amoco Foam Products.

Mineral/Glass Fiber Blanket/Batt Insulation: Glass or other inorganic fibers, formed into flexible, resilient blankets or semi-rigid sheets; complying with ASTM C665, type as indicated; density as indicated but not less than 1.0 lb. per cu. ft.; approximate thermal conductivity (k-value at 75 degrees F) of 0.27; thicknesses as indicated or as required to yield the "R" values as indicated; manufacturer's standard lengths and widths, as needed to coordinate with structural elements of spaces to be insulated.

Type I: Units without facing or membrane.

Provide semi-rigid units where required for self-support by friction fit.

Where shown in conjunction with a STC rating, provide density and composition which has been tested in the assembly shown to provide the rating indicated.

Type II: Units with non-reflective facing on at least one face, kraft paper and asphalt or similar composition to provide vapor barrier rated 1.0 perms maximum on the warm side; provide only highly permeable facing on cold side. Provide 1" flanges along long edges of units, unless not required for attachment of units.

Type III: Blown in insulation.

Blown-in loose fill fiberglass insulation, formaldehyde free, minimum R-48 value.
Flame spread 25. Smoke developed 50. Johns Manville Climate Pro or approved equal.

Polyethylene Vapor Barrier: Single polyethylene film, with vapor rating of 0.20 perms or less, based on 10.0 mil thickness. Provide film of natural color and 10.0 mils thick.

Miscellaneous Materials:

Adhesive for Bonding Insulation: The type recommended by the insulation manufacturer and complying with fire-resistance requirements.

Mechanical Anchors: Type and size shown or, of not shown, as recommended by the insulation manufacturer for the type of application shown and condition of substrate.

Wire Mesh Insulation Support: 2" x 24 gage galvanized steel wire hexagonal woven mesh.

Wire Arch Insulation Supports: Manufacturer's standard 11 gage galvanized spring-steel clip wire arches, for self-anchoring into wood joints; length as needed for joist spacing.

Provide Insulation Equal to: Insulation Safe III by Certainteed.

PART 3 - EXECUTION

INSTALLATION

General:

Comply with manufacturer's instructions for the conditions of installation in each case; including method of support or anchorage to the substrate, as appropriate for each application indicated. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for specific recommendations before proceeding with the work.

Extend insulation full thickness as shown over entire surface to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation.

Apply a single layer of insulation of the thickness indicated or the required thickness for the thermal value indicated, unless otherwise shown or required to make up the total thickness.

Unit-Type Building Insulation:

Apply insulation units of the type shown to the substrate by the method indicated. If not otherwise indicated and except for units resting on horizontal surfaces, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

Set vapor barrier faced units with vapor barrier to warm side of construction, (usually toward inside), except as otherwise shown. Do not obstruct ventilation spaces, except for firestopping.

Tape joints and ruptures in vapor barriers, using adhesive tape of type recommended by insulation manufacturer, and seal such continuous area of insulation to surrounding construction so as to ensure vapor-tight installation of the units.

Support under floor blanket insulation with vapor barrier up (if any). In wood frame construction, support by continuous wire mesh stapled to bottom of joists, or on wire arches impaled onto joists walls, at 12" spacing near bottom of joists; or provide type of blanket insulation which has permeable kraft paper face with nailing flanges.

Stuff loose mineral fiber insulation into miscellaneous voids and cavity spaces as indicated. Compact to approximately 40% of normal maximum volume (to a density of approximately 2.5 lbs. per cu. ft.).

END OF SECTION 07224

SECTION 07620 – METAL FLASHING AND TRIM

PART 1 – GENERAL

DESCRIPTION OF WORK

The extent of metal flashing and associated metal trim work is indicated on the drawings and by provisions of this section.

The following types of work are specified in this section:

Flashing at penetrations in roofing.

Base and counter flashing for roofing.

Flashing in exterior wall construction.

Valleys built-in gutters and scuppers.

Concealed metal expansion joints for walls.

Integral masonry flashings are specified as masonry work.

Material Selection: Unless otherwise indicated, provide the following materials for the metal flashing and trim work specified in this section:

Use zinc-coated (galvanized) steel sheet for work which is not exposed to view from ground level.

Use factory-finished galvanized steel sheet for work which is visible from ground level.

SUBMITTALS

Shop Drawings, Metal Flashing and Trim: Submit shop drawings showing fabrication, jointing and securing of metal to form flashing and trim. Show expansion joint details and waterproof connections to adjoining work and at obstructions and penetrations.

PART 2 – PRODUCTS
MATERIALS

Zinc Coated Steel: Provide commercial quality carbon steel sheets with minimum of 0.20% copper content complying with ASTM A 526, except provide ASTM A 527 where lock-forming is required; hot-dip galvanized to comply with ASTM A 525, designation G90, mill phosphatized where indicated for painting; of the thickness shown or, if not shown, 0.0239" thick (24 gage).

Factory-Finished Galvanized Steel Sheet: Hot-dip galvanized steel sheet, mill phosphatized, primed and coated on exposed side with clear galvanized finish, 24 gauge, at building parapet. Provide fluoropolymer coating and on concealed the side with whitewash coat, 24 gauge, at roof bid option and front entry canopy.

Manufacturer: Provide the following product:

Color Klad; Vincent Brass & Aluminum Co. or prior approved equal.

Aluminum Sheet: ASTM B209, alloy 3003, temper H 14, AA-C22A41, clear anodized finish; 0.032" thick (20 ga.) except as otherwise indicated.

Miscellaneous Materials:

Solder for Steel: ASTM B 32, 50% tin and 50% lead, used with rosin flux.

Nails, Screws and Rivets: Same material as flashing sheet, or other metal as recommended by manufacturer of flashing sheet for improved corrosion resistance.

Cleats: Same metal and gage as sheet being anchored, 2" wide, punched for 2 anchors.

Bituminous Coating: FS TT-C-494, or Mil-C-18480, or SSPC - Paint 12; nominally-free-of-sulfur, cold-applied, solvent type bituminous mastic coating for application in dry film thickness of 15 mils per coat.

Elastic Sheet Draft Stop: Manufacturer's standard flexible black non-reinforced neoprene flashing sheet of 50 to 60 mils thickness.

Paper Slip Sheet: 5-lb. rosin-sized building paper.

Polyethylene Underlayment: 6-mil carbonated polyethylene film, complying with ASTM E 154.

Elastomeric Sealant: Generic type recommended by metal sheet manufacturer; complying with Division 7, Section "Joint Sealers".

Mastic Sealant: Polyisobutylene (plain or modified) nonhardening, nonmigrating, non-skinning, nondrying mastic sealant.

Roofing Cement: ASTM D 2822 (Asphaltic). Provide type which is nominally free of sulfur.

Reglets: Metal or plastic, of the type indicated, style as required for the receiving substrate and type of inserted flashing metal, non-corrosive.

FABRICATED UNITS

General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels as indicated, with exposed edges folded back to form hems.

Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).

Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with industry standards.

Separations: Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contract, with bituminum coating or other permanent separation as recommended by manufacturer/ fabricator.

PART 3 – EXECUTION

INSTALLATION REQUIREMENTS

General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints and seams which will be permanently watertight and weatherproof.

Underlayment: Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a course of paper slip sheet and a course of polyethylene underlayment.

Install reglets to receive counter flashing in manner and by methods indicated. Where shown in concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division 4 sections.

Install counterflashing in reglets, either by snap-in seal arrangement, or by wedging in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.

Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6". Complete seams at joint between units with a minimum 4" overlap, to form a continuous waterproof system.

CLEANING AND PROTECTION

Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.

Protection: Installer shall advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

END OF SECTION 07620

SECTION 07900 - JOINT SEALERS

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of each form and type of joint sealer is indicated on drawings and, by the requirements of this section.

The required applications include, but are not necessarily limited to, the following:

Multi-part non-sag urethane sealant in all exterior building joints, including the following:

Joints at perimeter of door and window frames.

Masonry control joints.

Flashing reglets and retainers.

Miscellaneous exterior joints.

Acrylic emulsion sealant in all interior building joints, including the following:

Control joints in gypsum wallboard.

Joints at perimeter of door and window frames.

Miscellaneous interior joints.

Fire Stopping in all wall penetrations in fire rated partitions, including the following:

Conduit penetrations in gypsum wallboard.

Mechanical penetrations in gypsum wallboard.

Piping penetrations in gypsum wallboard.

Structural penetrations in gypsum wallboard.

All Connection joints of Pre-Cast Concrete Panels.

Related work specified elsewhere:

Joint sealers and fillers for exterior walks and paving are specified in Section 02515 - Concrete Walks, Curbs, and Paving.

Joint fillers for isolation joints for concrete floor slabs are specified in Section 03010 - Concrete Work.

Sealants and other compounds required for the installation of glass are specified in Section 08800 - Glass and Glazing.

SYSTEM PERFORMANCES

Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

QUALITY ASSURANCE

Installer Qualifications: Engage an Installer who has successfully completed within the last 5 years at least 5 joint sealer applications similar in type and size to that of this project and who will assign mechanics from these earlier applications to this project, of which one will serve as lead mechanic.

Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

Preconstruction Joint Sealer-Substrate Tests: Submit substrate materials representative of actual joint surfaces to be sealed to manufacturer of joint sealer products for laboratory testing of sealants for adhesion to primed and unprimed substrates and for compatibility with secondary seals, if required, as indicated below:

Use test methods standard with manufacturer to determine if priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealers to joint substrates under environmental conditions that will exist during actual installation.

Testing will not be required when joint sealer manufacturer is able to submit joint preparation data required above which is acceptable to Architect and is based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates matching those submitted.

Preconstruction Field Tests: Prior to installation of joint sealants, field-test their adhesion to joint substrates as follows:

Install joint sealants in 5-feet joint lengths using same materials and methods required for completed work. Allow sealants to cure before testing. Test adhesion to joint substrates by manually trying to pull joint sealant out of joint.

Locate test joints where indicated or, if not indicated, as directed by Architect.

Perform field tests for each application indicated below:

Each type of elastomeric sealant and joint substrate application indicated.

Each type of non-elastomeric sealant and joint substrate indicated.

Perform tests in Architect's presence.

Perform tests in Architect's presence with technical representative of joint sealer manufacturer present.

Field-Constructed Mock-Ups: Prior to installation of joint sealers, apply elastomeric sealants to the following selected building joints as indicated below for further verification of colors selected from sample submittals to represent completed work for qualities of appearance, materials and application:

Joints in field-constructed mock-ups of assemblies specified in other sections which are indicated to receive elastomeric joint sealants as work of this section.

Retain mock-ups during construction as standard for judging completed work.

SUBMITTALS

Product Data: Submit manufacturer's technical data for each joint sealer product required, including instructions for joint preparation and joint sealer application.

Certification by joint sealant manufacturer that sealants plus primers, cleaners comply with local regulations regarding use of volatile organic compounds.

Samples for Initial Selection Purposes: Submit manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.

Samples of Verification Purposes: Submit samples of each type and color of joint sealer required. Install joint sealer samples in 2" wide joints formed between two 6” long strips of material matching the appearance of exposed adjacent to joint sealers in the work.

Test Reports: Submit the following test reports:

Preconstruction joint sealer-substrate test results including recommendations of joint sealer manufacturer for joint preparation and application of joint sealers applicable to project conditions.

Certified test reports for elastomeric sealants (ASTM C719) evidencing compliance with requirements specified based on comprehensive testing of current product formulations within a 24-month period preceding date of submission of test reports to Architect. Include test results for aged performances including hardness, stain resistance, adhesion and cohesion under cylic movement, low-temperature flexibility, modulus of elasticity at 100% strain, effects of heat aging, and effects of accelerated weathering.

Provide test reports from an independent testing laboratory acceptable to Architect and experienced in the testing of elastomeric sealants.

Certified test reports for joint sealers of type indicated below evidencing compliance with specified requirements:

Foam-type filler-sealants.

Gaskets.

Preconstruction field test results reported by Installer indicating which products and joint preparation methods demonstrated acceptable adhesion to joint substrates.

Certificates: Submit certificates from manufacturers of joint sealers attesting that their products comply with specification requirements and are suitable for the use indicated.

DELIVERY, STORAGE AND HANDLING

Deliver materials to project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multicomponent materials.

Store and handle materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

PROJECT CONDITIONS

Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:

When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturers.

When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturer or below 40 degrees F (4.4 degrees C).
When joint substrates are wet due to rain, frost, condensation or other causes.

Joint Width Conditions: Do not proceed with installation of joint sealers when joint widths are less than allowed by joint sealer manufacturer for application indicated.

PART 2 - PRODUCTS

MATERIALS, GENERAL

Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.
Colors: Provide color of exposed joint sealers indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

ELASTOMERIC JOINT SEALANTS

Elastomeric Sealant Standard: Provide manufacturer's standard chemical curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Glass and Uses.

Multi-Part Nonsag Urethane Sealant: Type M, Grade NS, Class 25, and complying with the following requirements for uses:

Uses NT, M, A and, as applicable to joint substrates indicated, O.

Products: Subject to compliance with requirements, provide one of the following:

Multi-Part Nonsag Urethane Sealant for Uses NT, M, A and O:

"Dynatrol II"; Pecora Corp.
"Sikaflex 2c NS"; Sika Corp.
"Sonolastic NP 2"; Sonneborn Building Products Div., Rexnord Chem. Prod. Inc.
"Vulkem 227"; Mameco International, Inc.
"Dymeric"; Tremco Inc.

Expansion Joint Filler: Sonneborn “Sonolastic” polyethylene closed cell backing or approved equal.

LATEX JOINT SEALANTS

Acrylic-Emulsion Sealant: Manufacturer's standard, one part, nonsag, acrylic, mildew-resistant, acrylic-emulsion sealant complying with ASTM C 834, formulated to be paintable and recommended for exposed applications on interior and on protected exterior exposures involving joint movement of not more than +/- 5%.

Products: Subject to compliance with requirements, provide one of the following:

"AC-20"; Pecora Corp.
"Sonolac"; Sonneborn Building Products Div.; Rexnord Chem. Prod., Inc.
"Tremco Acrylic Latex Caulk"; Tremco Inc.

JOINT SEALANT BACKING

General: Provide sealant backings of material and type which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

Plastic Foam Joint-Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

Either flexible, open cell polyurethane foam or non-gassing, closed-cell polyethylene foam, unless otherwise indicated, subject to approval of sealant manufacturer.

Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back (3rd) surface of joint. Provide self-adhesive tape where applicable.

FIRESTOPPING SEALANT

Intumescent Acrylic-Firestop Sealant-Type IA: Manufacturer's standard, one part, nonsag, acrylic, mildew-resistant, acrylic-emulsion sealant complying with ASTM E 814, formulated to be paintable and recommended for exposed applications on interior.

Intumescent Gap Seals – At Pre-Cast Concrete Panel Connections: Manufacturer's standard, light weight, 40% compression or expansion, water resistant.

MISCELLANEOUS MATERIALS

Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealer-substrate and field tests.

Cleaners for Nonporous Surfaces: Provide non-staining, chemical cleaner of type acceptable to manufacturer of sealant and sealant backing materials which are not harmful to substrates and adjacent nonporous materials.
Masking Tape: Provide non-staining, non-absorbent type compatible with joint sealants and to surfaces adjacent to joints.

PART 3 - EXECUTION

INSPECTION

Require Installer to inspect joints indicated to receive joint sealers for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Obtain Installer's written report listing any conditions detrimental to performance of joint sealer work. Do not allow joint sealer work to proceed until unsatisfactory conditions have been corrected.

PREPARATION

Pre-Installation Meeting: At Contractor's direction, Installer, joint sealer manufacturer's representatives and other trades whose work affects installation of joint sealers shall meet at project site to review procedures and time schedule proposed for installation of joint sealers which is coordinated with other, related work.
Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:

Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; oil; grease; waterproofing; water repellents, water; surface dirt and frost.

Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, acid washing or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

Remove laitance and form release agents from concrete.

Clean metal, glass, porcelain enamel, glazed surfaces or ceramic tile and other non-porous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond; do not allow spillage or migration onto adjoining surfaces.

Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

INSTALLATION OF JOINT SEALERS

General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications and conditions indicated.

Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

Install joint-fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.

Do not leave gaps between ends of joint-fillers.

Do not stretch, twist, puncture or tear joint-fillers.

Remove absorbent joint-fillers which have become wet prior to sealant application and replace with dry material.

Install bond breaker tape between sealants and joint- fillers, compression seals or back of joints where required to prevent third-side adhesion of sealant to back of joint.

Installation of Sealants: Install sealants of proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.

Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

Concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

Flush joint configuration per Figure 5B in ASTM C 1193, where indicated.
Use masking tape to protect adjacent surfaces or recessed tooled joints.

Recessed joint configuration per Figure 5C in ASTM C 1193, of recess depth and at locations indicated.

PROTECTION AND CLEANING

Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of substantial completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and reseal joints with new materials to produce joint sealer installation with repaired areas indistinguishable from original work.

Clean off excess sealants or sealants smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

END OF SECTION 07900

SECTION 08100 - HOLLOW METAL WORK

PART 1 - GENERAL

SUMMARY

The extent of hollow metal work is shown on the drawings and schedules.

This section includes hollow metal doors, and pressed steel frames for doors and related openings.

QUALITY ASSURANCE

Provide hollow metal work manufactured by a single firm specializing in the production of this type of work, unless otherwise acceptable to the Architect.

Provide hollow metal work which complies with current ASTM Standards referenced below.

Fire-Rated Assemblies: Provide fire-rated hollow metal doors and frames investigated and tested as a fire door assembly, complete with type of fire door hardware to be used. Identify each fire door and frame with recognized testing laboratory labels, indicating applicable fire rating of both door and frame. Construct assemblies to comply with NFPA Standard No. 80, and as herein specified.

Provide Steel Doors which comply with steel door institute requirements as well as those listed below.

SUBMITTALS

Product Data: Submit manufacturer's specifications for fabrication and installation including data substantiating that products comply with requirements.

Shop Drawings: Submit shop drawings for the fabrication and installation of hollow metal work. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections.

Provide a schedule of doors and frames using same reference numbers for details and openings as those on the contract drawings.

DELIVERY, STORAGE AND HANDLING

Deliver hollow metal work cartoned or crated to provide protection during transit and job storage.

Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided the finish items are equal in all respects to new work and acceptable to the Architect; otherwise, remove and replace damaged items as directed.

Store doors and frames at the building site under cover. Place units on at least 4" high wood sills or on floors in a manner that will prevent rust and damage. Avoid the use of non-vented plastic or canvas shelters which could create a humidity chamber. If the cardboard wrapper on the door becomes wet, remove the carton immediately. Provide a 1/4" space between stacked doors to promote air circulation.

PART 2 - PRODUCTS

MANUFACTURERS

Manufacturers offering products to comply with the requirements for hollow metal work include the following:

CECO Corp.
Curries Co.
Steel Craft Manuf. Co.
Republic Builders Products

MATERIALS

Hot-Rolled Steel Sheets and Strips: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM 568.

Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.

Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, with ASTM A 525, G60 zinc coating, mill phosphatized.

Stainless Steel Sheets: Commercial quality stainless steel, AISI Type 302/304, complying with ASTM A 167 finished to #4 polish.

Supports and Anchors: Fabricate of not less than 16 gage sheet metal. Galvanize after fabrication units to be built into exterior walls, complying with ASTM A 153, Class B.

Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanized items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.

Shop-Applied Paint: For steel surfaces, use rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints. Comply with ANSI A224.1.

FABRICATION, GENERAL

General: Fabricate hollow metal units to be rigid, neat in appearance and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at the project site. Weld exposed joints continuously, grind, dress, and make smooth, flush and invisible. Metallic filler to conceal manufacturing defects is not acceptable.

Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips or Jackson heads for exposed screws and bolts.
Finish Hardware Preparation:

Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A 115 "Specifications for Door and Frame Preparation for Hardware".

Reinforce hollow metal units to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

Locate finish hardware as shown on final shop drawings, or if not shown, in accordance with "Recommended Locations for Builder's Hardware", published by National Builders' Hardware Association.

Shop Painting:

Clean, treat and paint exposed surfaces of fabricated hollow metal units, including galvanized surfaces, but excluding stainless steel surfaces.

Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before the application of the shop coat of paint.

Apply shop coat of prime paint within time limits recommended by pretreatment manufacturer. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 2.0 mils.

DOORS

General:

Provide flush design doors, 1-3/4" thick, seamless hollow construction, unless otherwise indicated.

For single-acting swing doors, bevel both vertical edges 1/8" in 2".

Tolerances: Comply with SDI 117 Standards for manufacture.

Provide sound insulation filler of fiberboard, mineral-wool board, asbestos, or other approved noncombustible material solidly packed full door height to fill the voids between inner core reinforcing members.

Provide manufacturer's standard Honeycomb construction at interior doors where acceptable to architect.

Reinforce doors with rigid tubular frame where stile and rails are less than 8" wide. Form tubular frame with 16 gage steel, welded to outer sheets.

Thermal-Rated Assemblies:

At exterior doors, provide door/frame assembly rating of U = 0.41 BTU, tested in accordance with ASTM C236 or C976.

Painted Exterior Doors:

Comply with ANSI/SDI-112 requirements and as follows:

Fabricate exterior doors of 2 outer galvanized, stretcher-leveled steel sheets not less than 16 gage. Construct doors with smooth, flush surfaces without visible joints or seams or exposed faces or stile edges, except around glazed or louvered panel inserts. Provide weep hole openings in the bottom of exterior doors to permit the escape of entrapped moisture.

Reinforce tops and bottoms of doors with 16 gage horizontal steel channels welded continuously to the outer sheets. Close top and bottom edges to provide weather seal, as integral part of door construction or by addition of inverted steel channels.

Finish Hardware Reinforcement: Reinforce doors for required finish hardware, as follows:

Hinges: Steel plate 3/16" thick x 1-1/2" wide x 6" longer than hinge, secured by not less than 6 spot-welds.

Mortise Locksets and Dead Bolts: 14 gage steel sheets, secured with not less than 2 spot-welds.

Cylinder Locks: 12 gage steel sheets, secured with not less than 2 spot-welds.

Flush Bolts: 12 gage steel sheets, secured with not less than 2 spot-welds.

Surface-Applied Closers: 12 gage steel sheets, secured with not less than 6 spot-welds.

Push Plates and Bars: 16 gage steel sheets, (except when through bolts are shown or specified), secured with not less than 2 spot-welds.

Surface Panic Devices: 14 gage sheet steel (except when through bolts are shown or specified), secured with not less than 2 spot-welds.

HOLLOW METAL TRANSOM PANELS

Provide hollow metal panels of same materials, construction, and finish as specified for hollow metal doors.

FRAMES

Provide hollow metal frames for doors, transoms, side-lights, borrowed lights, and other openings, of size and profile as indicated. Provide equal rabbet frames, unless indicated otherwise.

Fabricate frames of full-welded unit construction, with corners mitered, reinforced, continuously welded full depth and width of frame, unless otherwise indicated. Gypsum wallboard partitions, provide "drywall returns".

Knock-down type frames are not acceptable.

Form frames of galvanized steel sheets for exterior, and either cold or hot-rolled sheet steel for interior.

Exterior Openings: Not less than 14 gauge.

Interior Openings: Gauge indicated, but not less than 16.

Finish Hardware Reinforcement: Reinforce frames for required finish hardware, as follows:

Hinges and Pivots: Steel plate 3/16" thick x 1-1/2" wide x 6" longer than hinge, secured by not less than 6 spot-welds.

Strike Plate Clips: Steel plate 3/16" thick x 1-1/2 " wide x 3" long.

Surface-Applied Closers: 12 gage steel sheets, secured with not less than 6 spot-welds.

Concealed Closers: Removable steel access plate, 12 gage internal reinforcement of size and shape required, and enclosing housing to keep closer pocket free of mortar or other materials.

Mullions and Transom Bars: Provide closed or tubular mullions and transom bars where indicated. Fasten mullions transom bars at crossings and to jambs by butt welding. Reinforce joints between frame members with concealed clip angles or sleeves of same metal thickness as frame.

Jamb Anchors: Furnish jamb anchors as required to secure frames to adjacent construction, formed of not less than 18 gage galvanized steel.

Masonry Construction: Adjustable, flat, or corrugated or perforated, t-shaped to suit frame size with leg not less than 2" wide by 10" long. Furnish at least 3 anchors per jamb up to 7'-6" height; 4 anchors up to 8'-0" jamb height; one additional anchor for each 24" or fraction thereof over 8'-0" height.

Metal Stud Partitions: Metal stud anchors intended for use with channel-type metal studs, welded to back of frames and screw-attached to studs. Provide at least 4 anchors for each jamb for frames up to 7'-6" in height; 5 anchors up to 8'-0" jamb height; one additional anchor for each 24" or fraction thereof over 8'-0" height.

In-Place Concrete or Masonry: Anchor frame jambs with minimum 3/8" concealed bolts into expansion shields or inserts at 6" from top and bottom and 26" o.c., unless otherwise shown. Reinforce frames at anchor locations. Apply removable stop to cover anchor bolts unless otherwise indicated.

Floor Anchors: Provide floor anchors for each jamb and mullion which extends to floor, formed of not less than 14 gage galvanized steel sheet, as follows:

Monolithic Concrete Slabs: Clip type anchors, with 2 holes to receive fasteners, welded to bottom of jambs and mullions.

Separate Topping Concrete Slabs: Adjustable type with extension clips, allowing not less than 2" height adjustment. Terminate bottom of frames at finish floor surface.

Head Anchors: Provide 2 anchors at head of frames exceeding 42" wide for frames mounted in steel stud walls.

Spreader Bars: Provide removable spreader bar across bottom of frames, tack welded to jambs and mullions.
Rubber Door Silencers: Except at doors to receive weather/sound stripping, drill stop to receive 3 silencers on single-door frames and 4 silencers on double-door frames. Install plastic plugs to keep holes clear during construction.

Plaster Guards: Provide 26-gauge steel guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and close off interior openings.

STOPS AND MOLDINGS

Provide stops and moldings around solid, glazed and louvered panels in hollow metal units and in frames to receive doors, where indicated.

Form fixed stops and moldings integral with frame, unless otherwise acceptable to the Architect.

Provide removable stops and molds where indicated or required, formed of not less than 20 gage steel sheets, matching steel of frames. Secure with countersunk machine screws space uniformly not more than 12" o.c. Form corners with mitered hairline joints.

Coordinate width of rabbet between fixed and removable stops with type of glass or panel and type of installation indicated.

PART 3 - EXECUTION

INSTALLATION

Install hollow metal units and accessories in accordance with the final shop drawings, manufacturer's data, and as herein specified.

Setting Masonry Anchorage Devices:

Provide masonry anchorage devices where required for securing hollow metal frames to in-place concrete or masonry construction.

Set anchorage devices opposite each anchor location, in accordance with details on final shop drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.

Floor anchors may be set with powder-actuated fasteners instead of masonry anchorage devices and machine screws, if so, indicated on final shop drawings.

Placing Frames: Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

In masonry construction, building-in of anchors and grouting of frames is included in Division 4 sections of these specifications.

At in-place concrete or masonry construction, set frames and secure in place with machine screws and masonry anchorage devices.

Place frames at fire-rated openings in accordance with NFPA Standard No. 80.

Make field splices in frames as detailed on final shop drawings, welded, and finished to match factory work.

Remove spreader bars only after frames of bucks have been properly set and secured.

Grout frames in concrete walls of carwash, grout before setting.

Door Installation:

Fit hollow metal doors accurately in their respective frames, with the following clearances:

Jambs and Head: 3/32".

Meeting Edges, Pairs of Doors: 1/8".

Bottom: 3/4", where no threshold or carpet.

Bottom: at threshold or carpet: 1/4".

Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

Finish hardware installation is specified under the Section 08700.

ADJUST AND CLEAN

Final Adjustments: Check and readjust operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise unacceptable.

Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

Stainless Steel Touch-Up: Immediately after erection, smooth any abraded areas of stainless steel and polish to match finish of hollow metal units.

END OF SECTION 08100

SECTION 08210 - WOOD DOORS

PART 1 - GENERAL

SUMMARY

Extent and location of each type of wood door is indicated on drawings and in schedules.

Types of doors required include the following:

Solid core flush wood doors with veneer faces.

SUBMITTALS

Product Data: Door manufacturer's technical data for each type of door, including details of core and edge construction, and trim for openings and louvers (if any).

Include certifications as may be required to show compliance with specifications.

Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.

Samples: Submit samples, 1'-0" square or as indicated for the following:

Doors for Transparent Finish: Door faces with solid wood edging representing typical range of color and grain of wood for each species of veneer and solid lumber required.

QUALITY ASSURANCE

Manufacturer: Obtain doors from a single manufacturer.

PRODUCT DELIVERY, STORAGE AND HANDLING

Protect wood doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with requirements of referenced standards and recommendations of NWWMA pamphlet "How to Store, Handle, Finish, Install, and Maintain Wood Doors", as well as manufacturer's instructions.

Identify each door with individual opening numbers which correlate with designation system used on shop drawings for door, frames, and hardware, using temporary, removable or concealed markings.

PROJECT CONDITIONS

Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period to comply with the following requirements applicable to the project's geographical location:

Referenced AWI quality standard including Section 100-s-3 "Moisture Content".

WARRANTY

General: Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.

Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or which shown telegraphing of core construction below in face veneers, or do not conform to tolerance limitations of referenced quality standards.

Warranty shall also include reinstallation which may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.
Warranty shall be in effect during following period of time after date of Substantial Completion.

Solid Core Interior Doors: Life of installation.

Contractor's Responsibilities: Replace or refinish doors where Contractor's work contributed to rejection or to voiding of manufacturer's warranty.

PART 2 - PRODUCTS

MANUFACTURERS

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Solid Core Doors with Wood Veneer Faces:

VT Industries
Graham Co.
Marshfield Door Systems

MATERIALS AND COMPONENTS

General: Provide wood doors complying with applicable requirements of referenced standard for kinds and types of doors indicated and as specified.

Face Panels: Manufacturer's standard 2- or 3-ply face panels, unless otherwise indicated.

Exposed Surfaces: Provide kind shown or scheduled and as further specified. Provide same exposed surface material on both faces of each door, unless otherwise indicated.

PRE-FINISHED INTERIOR FLUSH WOOD DOORS

Solid Core Doors Pre-Finished Transparent Finish: Comply with the following requirements:

Faces: Red Oak, plain sliced, book,

AWI Grade: Custom.

Finish: From the manufacture's standard selections, match the finish of the existing doors.

Construction: PC-5 (Bonded Particleboard Core)

Fire-Rated Solid Core Doors: Comply with the following requirements:

Faces and AWI Grade: Provide faces and grade to match non-rated doors in same area of building, unless otherwise indicated.

Core Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.

PART 3 - EXECUTION

FABRICATION

Fabricate flush wood doors to produce doors complying with following requirements:

In sizes indicated for job-site fitting.

Metal Astragals: Pre-machine astragals and formed steel edges for hardware where required for pairs of fire-rated doors.

Openings: Cut and trim openings through doors and panels as shown. Comply with applicable requirements of referenced standards for kind(s) of doors required.

INSTALLATION

Hardware: For installation see Division 8 "Finish Hardware" section of these specifications.

Manufacturer's Instructions: Install wood doors in accordance with manufacturer's instructions and as shown.

Install fire-rated doors in corresponding fire-rated frames in accordance with requirements of NFPA No. 80.

Bevel non-rated doors 1/8" in 2" at lock and hinge edges.

Factory Finished Doors: TR-6 Clear Finish or painted from standard manufacturer finishes.

ADJUSTING AND PROTECTION

Operation: Re-hang or replace doors which do not swing or operate freely, as directed by Architect.

Finished Doors: Refinish or replace doors damaged during installation, as directed by Architect.

Institute protective measures as recommended and accepted by door manufacturers to assure that wood doors will be without damage or deterioration at time of substantial completion.

END OF SECTION 08210

SECTION 08610 - WOOD WINDOWS

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of each type (operation) of wood window unit, hereby defined to include wood units clad with other materials (if any), is shown on the drawings.

The applications of wood windows on project include the following:

Individual units set in wall construction.

Wood Trim: Refer to sections of Division 6 for interior and exterior wood trim (if any) not specified as integral components of window units (casings, moldings, stools, aprons, subsills, mullion covers and similar components).

QUALITY ASSURANCE

Manufacturer: Provide wood window units produced by a single fabricator, capable of showing prior successful production of units similar to those required.

SUBMITTALS

Manufacturer's Data; Wood Windows: Submit manufacturer's specifications, standard details and recommendations for each type of wood window unit required. Include information on fabrication methods, wood treatment, finishing, hardware, glazing and accessories.

PART 2 - PRODUCTS

MATERIALS

General: Except as otherwise indicated, comply with NWMA standard I.S.2-73 for materials in wood window units.

Fasteners: Comply with NWMA requirements-for fabrication; and with manufacturer's recommendations and standard industry practices for type and size of installation fasteners.

For fabrication of wood members, use zinc-coated or nonferrous nail and screws.

For installation of wood window units use zinc-coated or nonferrous nails and screws.

For hardware and accessory installation use brass screws.

Compression Weather-stripping: Manufacturer's standard nonferrous spring metal, or vinyl gasket, designed for permanently resilient sealing under bumper or wiper action, completely concealed when window sash is closed.

Sliding Weather-stripping: Woven pile stripping of wool, polypropylene or nylon pile, with resin-impregnated backing fabric; comply with AAMA 701.2.

Wire Fabric (Insect) 18 x 14 mesh of 0.013" diameter aluminum wire, complying with FS RR-W-365, Type VII; except black anodized or "gun metal" coating on wire.

Glass Fiber Mesh (Insect): 18 x 16 x 18 x 14 mesh of plastic-coated glass fiber threads, woven and fused to form fabric mesh which is resistant to corrosion, shrinkage, stretch, impact damage and weather deterioration; black or dark grey. Comply with FS L-S-125.

Insect Screens Frames: Manufacturer's standard formed aluminum or extruded aluminum frames, with anodized aluminum finish or baked-on organic coating; removable vinyl fabric retainer spline.

Finish Color: Selected by Architect from manufacturer's standard colors.

Hardware: Manufacturer's standard design for the operation indicated.

Provide hardware of solid white-metal with a special-coating finish, or solid bronze; with plated steel or brass/bronze operating bars and rods.

Aluminum Cladding: Provide manufacturer's standard formed sheet or extruded aluminum cladding, applied on exterior exposure of wood members; finished with baked-on acrylic coating, color selected by Architect from manufacturer's standard colors.

Trim members provided with aluminum-clad window units may be either aluminum-clad wood or hollow aluminum extrusions or formed members, at manufacturer's option.

Glass and Glazing Materials: Manufacturer's standard products, as described in current manufacturer's data.

WINDOW TYPES (OPERATIONS)

General: The following paragraphs define operating arrangement for sash (ventilators) in window units. The drawings show which panels of each unit are operable and which are fixed.

Wood Clad Casement Windows

WINDOW CLASSIFICATION (GRADE)

Manufacturer's Standard Class: Provide window units of the following designation (Contractor's option if more than one designation) complying with manufacturer's published data for that designation, and also complying with more stringent requirements (if any), specified herein:

Manufacturer/Product: Provide the following window units: or approved equal prior to bid opening.

Base Bid: Aluminum clad wood windows with Low-E triple pane glass with between the glass raise and lower shades.

Pella Reserve – Contemporary Casement Window

MANUFACTURED UNITS

A. Description: Factory assembled Clad Casement Wood Window see window schedule on drawings for size and layout, operating exterior swing window (and related stationary or picture units) as manufactured by Marvin Windows and Doors, Warroad, Minnesota or Pella Windows, Pella Iowa.

2.2 ALUMINUM-CLAD WOOD CASEMENT WINDOWS

A. Aluminum-Clad Wood Casement Windows: Designer Series factory-assembled aluminum-clad wood windows with outward-opening sash installed in frame.

B. Frame:
1. Select woods, water-repellent, preservative-treated with EnduraGuard® in accordance with WDMA I.S.-4. EnduraGuard includes water-repellency, three active fungicides and an insecticide applied to the frame.
2. Interior Exposed Surfaces: Pine.
3. Exterior Surfaces: Clad with aluminum.
4. Overall Frame Depth: 5 inches (127 mm).

C. Sash:
1. Select woods, water water-repellent, preservative-treated with EnduraGuard in accordance with WDMA I.S.-4. EnduraGuard includes water-repellency, three active fungicides and an insecticide applied to the sash.
2. Interior Exposed Surfaces: Pine.
3. Exterior Surfaces: Clad with aluminum, lap-jointed at corners.
4. Corners: Mortised and tenoned, glued and secured with metal fasteners.
5. Sash Thickness 2-3/16 inches (56 mm.

D. Weather Stripping:
1. Dual weather stripping.
2. Continuous, flexible, Santoprene material in dual-durometer design.
3. Units shall have welded corners, compressed between frame and sash for positive seal on all 4 sides.
4. Secondary PVC leaf-type weather strip between sash and frame for positive seals on all 4 sides.

2.3 GLAZING

A. Glazing:
1. Float Glass: ASTM C 1036, Quality 1.
   a. Tempered Glass: ASTM C 1048.

2. Type: Silicone-glazed 11/16-inch dual-seal, annealed insulating glass, bronze air-filled multi-layer, Low-E coated.

3. Type: Silicone-glazed 1” triple-pane, dual-seal, annealed bronze air-filled multi-layer, Low-E coated.

B. Glazing:
1. Float Glass: ASTM C 1036, Quality 1.
   a. Tempered Glass: ASTM C 1048.
2. Type:
   a. Triple-Pane Glazing System: 5/8-inch annealed/heat strengthened dual-seal insulating glass, silicone-glazed bronze air-filled multi-layer, Low-E coated. Interior-hinged glass panel set in veneer covered aluminum frame, fitted to sash with continuous gasket seal, clear.

2.4 OPTIONS

A. Insect Screens: Vivid View®.
1. Compliance: ASTM D 3656 and SMA 1201.
2. Screen Cloth: Vinyl-coated fiberglass, 21/17 mesh, with minimum 78 percent light transmissivity.
3. Set in aluminum frame fitted to inside of window.
4. Complete with necessary hardware.
5. Screen Frame Finish: Baked enamel.
   a. Color: Champagne

D. Blinds: Slimshade.
1. 15 mm aluminum slat raise and lower blinds with polyester cord ladder.
2. Installed in Designer glazing system between panes of glass.

3. Operated with cordless operator.
4. Controlled by built-in operating mechanism.
5. Type: Snap-in/snap-out, attached to top of hinged-glass panel.
6. Color: Champagne.

2.5 HARDWARE

A. Operator:
1. Steel worm-gear operator with hardened gears.
2. Operator Base: Zinc die cast with painted finish.
3. Operator Linkage, Hinge Slide, and Hinge Arms: Stainless steel.
4. Exposed Fasteners: Stainless steel.
5. External Hardware Salt Spray Exposure, ASTM B 117: Exceed 1,000 hours.

B. Crank Handle Finish
1. Integrated Folding Crank: Baked enamel, champagne.

C. Locking System: SureLock System.
1. Single-handle locking system.
2. Operate positive-acting arms that reach out and pull sash into locked position.
3. Casement Windows: One installed on sash 29 inches and smaller in frame height, 2 unison operating locks installed on sash over 29 inches in frame height.
4. Lock Handle Finish: Baked enamel, champagne.

2.6 TOLERANCES

A. Windows shall accommodate the following opening tolerances:
1. Vertical Dimensions Between High and Low Points: Plus 1/4 inch, minus 0 inch.
2. Width Dimensions: Plus 1/4 inch, minus 0 inch.
3. Building Columns or Masonry Openings: Plus or minus 1/4 inch from plumb.

2.7 FINISH

A. Exterior Finish System: Pella EnduraClad.
1. Exterior aluminum surfaces shall be finished with the following multi-stage system:
   a. Clean and etch aluminum surface of oxides.
   b. Pre-treat with conversion coating.
   c. Topcoat with baked-on polyester enamel.
2. Color: to be selected by owner from standard colors.
3. Performance Requirements: Exterior aluminum finishes shall meet or exceed all performance requirements of AAMA 2603 and the following performance requirements of AAMA 2605:
   a. Dry Film Hardness: Eagle Turquoise Pencil, H minimum.
   b. Film Adhesion: 1/16-inch crosshatch, dry, wet, boiling water.
   c. Impact Resistance: 1/10-inch distortion, no film removal.
   d. Chemical Resistance: 10 percent Muriatic acid, 15 minutes. Mortar pat test, 24 hours.
   e. Detergent Resistance: 3 percent at 100 degrees F, 72 hours.
   f. Corrosion Resistance (ASTM G85-A5): Humidity, 3,000 hours. Salt spray exceeds 3,000 hours.

B. Interior Finish: Unfinished, ready for site finishing.

2.8 INSTALLATION ACCESSORIES

A. Flashing/Sealant Tape: Pella SmartFlash.
1. Aluminum-foil-backed butyl window and door flashing tape.
2. Maximum Total Thickness: 0.013 inch.
3. UV resistant.
4. Verify sealant compatibility with sealant manufacturer.

B. Interior Insulating-Foam Sealant: Low-expansion, low-pressure polyurethane insulating window and door foam sealant.

C. Exterior Perimeter Sealant: "Pella Window and Door Installation Sealant" or equivalent high quality, multi-purpose sealant as specified in the joints sealant section.

2.9 SOURCE QUALITY CONTROL

A. Factory Testing: Factory test individual standard operable windows for air infiltration in accordance with ASTM E 283, to ensure compliance with this specification.

FABRICATION ACCESSORIES, SHOP FINISH

General: Comply with NWMA I.S. 2-73, except as otherwise indicated.

Sizes and Profiles: Conform to size and profile limitations as shown, which may be based on one or more manufacturer's published details. Similar details by other manufacturers are acceptable if in close conformance with sized and profiles shown, as acceptable to Architect.

Where custom sizes are indicated, coordinate dimensions with actual measure of window openings in construction work. However, coordinate fabrication schedule with construction progress as directed by Contractor and, where necessary, fabricate without field measurement, providing installation tolerances to ensure proper fit of window units.

The scope of each window units, except as otherwise indicated, includes the sash or sashes, frame, stops, sill (including undersill or nosing, if any), exterior casing and moldings, integral mullions and muntins (if any), hardware and accessories.

Provide weather-stripping at perimeter of each operating sash.

Provide removable insect screen for each operating sash, with location (exterior or interior) determined by manufacturer except as otherwise indicated.

Provide glazing stops (bead), nailed or snap-on, coordinated with glass selection and glazing system as indicated.

Groove Glazing: At fabricators option, glass which is to be pre-glazed may be installed in wood sash without removable stops provided sticking is kerfed to facilitate removal for replacement of broken glass.

Pre-glaze wood window units at shop before delivery, unless not available as pre-glazed from fabricator; except do not pre-glaze light sizes in excess of 100 united inches, and do not pre-glaze insulating glass which is either metal-bound or exposed-sealant-bound (fused-glass edge insulating units may be pre-glazed).

Pre-glaze by fabricator's standard methods, using manufacturer's standard insulating glass for all units.

Provide removable double-glazing panels (storm windows) for each sash of window units (fixed and operating), except as otherwise indicated. Frame, pre-glaze, and attach to sash in accordance with fabricator's published standards.

Omit double glazing panels on sash indicated to be glazed with insulating glass.
Omit double glazing panels on glazed sliding wood door sash indicated to be glazed with insulating glass.

PART 3 - EXECUTION

INSTALLATION

Comply with manufacturer's instruction and recommendations for installation of wood window units, hardware, accessories and other components of the work.

Set units plumb, level and true to line, without warp or arch of frames or sash. Provide proper support and anchor securely in place. Refer to Section 07900 for joint fillers and sealants required for installation.

Adjust operating sash and hardware to provide smooth operation with tight, weatherproof closure. Lubricate hardware and moving parts.

Clean glass of window units promptly after installation (and glazing where not pre-glazed); comply with requirements of 8A-Series sections for cleaning and maintenance.

Advise Contractor of protection require through remainder of construction period, to ensure that wood window units will be without damage of deterioration (other than normal weathering) at time of acceptance.

END OF SECTION 08610

SECTION 08700 - FINISH HARDWARE

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of finish hardware is shown on the drawings and in schedules. Finish hardware is hereby defined to include all items known commercially as finish hardware, as required for swing doors.

The required types of finish hardware include (but are not necessarily limited to) the following:

Butts and hinges
Lock cylinders and keys
Lock and latch sets
Closers
Door control devices
Stripping and seals
Thresholds
Miscellaneous hardware

QUALITY ASSURANCE

Acceptable Designs: The last article of this section indicates products which are of acceptable design for primary exposure (locksets, etc.). Do not change the selection of products without the Architect's approval.

Acceptable Manufacturers: The last article of this section indicates acceptable manufacturers of primary items of finish hardware.

Hand of Door: The drawings show the swing or hand of each door leaf (left, right, reverse bevel, etc.). Furnish each item of hardware for proper installation and operation of the door swing as shown.

SUBMITTALS

Manufacturer's Data; Finish Hardware: Submit manufacturer's product data for each item of hardware. Include whatever information may be necessary to show compliance with requirements and include instructions for installation and for maintenance of operating parts and exposed finishes.

Hardware Schedule; Finish Hardware: Submit hardware schedule in the manner and format specified, complying with the actual construction progress schedule requirements (for each draft). Hardware schedules are intended for coordination of the work. Review and acceptance by the Architect or Owner do not relieve the Contractor of his exclusive responsibility to fulfill the requirements as shown and specified.

Include a separate key schedule, showing clearly how the Owner's final instructions on keying of locks have been fulfilled.

JOB CONDITIONS

Coordination: Coordinate hardware with other work. Tag each item or package separately, with identification related to the final hardware schedule, and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thicknesses, profile, swing, security and similar requirements indicated, as necessary for proper installation and function. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check the shop drawings of such other work, to confirm that adequate provisions are made for the proper installation of hardware.

PART 2 - PRODUCTS

MATERIALS

See article "Finish Hardware Data Sheet and Schedule" on drawings sheet A101.

Hardware finish shall be as follows:

Interior wood doors:	silver finish from manufacturers standards
Exterior metal doors:	silver finish from manufacturers standards
Aluminum doors:	aluminum mill clear finish.

PART 3 - EXECUTION

INSTALLATION

Mount hardware units at heights indicated in "Recommended Locations for Builders' Hardware" by the Door and Hardware and Institute (DHI), except as otherwise specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by the Architect.

Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way. Coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the 9T-Series sections. Do not install surface-mounted items until finishes have been completed on the substrate.

Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

Cut and fit threshold and floor covers to profile of door frames, with mitered corners and hairline joints join units with concealed welds or concealed mechanical joints. Cut smooth openings for spindles, bolts and similar items, if any.

Screw thresholds to substrate with No. l0 or larger screws, of the proper type for permanent anchorage and of bronze or stainless steel which will not corrode in contact with the threshold metal.

On heavy-duty cast metal thresholds, provide not less than 3/8" diameter screw anchors.

At exterior doors, and elsewhere as indicated, set each edge of threshold in a seal strip of butyl rubber sealant or polyisobutylene mastic sealant.

END OF SECTION 08700

SECTION 09250 – GYPSUM DRYWALL

PART 1 – GENERAL

SUMMARY

Extent of each type of gypsum drywall construction required is indicated on Drawings.

This section includes the following types of gypsum board construction:

Wood framing members to receive gypsum board.
Wood framing members to receive gypsum board and soundboard.

Non-Load Bearing steel studs and "C" shaped steel joists for structural framing are specified in Division-5 Section "Cold-Formed Metal Framing.

Wood framing and furring area specified in the following Division 6 sections:

"Rough Carpentry."

Gypsum board shaft walls are specified in Division-9 Section "Drywall Shaft Systems."

Gypsum sheathing for screw-attachment to steel framing is specified in Division-9 Section "Gypsum Sheathing."

Glass mesh mortar units for application of tile are specified in Division-9 Section "Tile."

DEFINITIONS

Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA 505 for definitions of terms for gypsum board construction not otherwise defined in this section or other referenced standards.

SUBMITTALS

Product data from manufacturers for each type of product specified.

QUALITY ASSURANCE

Fire-Resistance Ratings: Where indicated, provide materials and construction which are identical to those of assemblies whose fire resistance rating has been determined per ASTM E 119 by a testing and inspecting organization acceptable to authorities having jurisdiction.

Provide fire-resistance-rated assemblies identical to those indicated by reference to GA File No's. in GA-600 "Fire Resistance Design Manual" or to design designations in U.L. "Fire Resistance Directory" or in listing of other testing and agencies acceptable to authorities have jurisdiction.

Single Source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.

DELIVERY, STORAGE, AND HANDLING

Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

Handle gypsum boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

PROJECT CONDITIONS

Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.

Minimum Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 degrees F (4 degrees C). For adhesive attachment and finishing of gypsum board maintain not less than 50 degrees F (10 degrees C) for 48 hours prior to application and continuously thereafter until drying is complete.

Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.

PART 2 – PRODUCTS

MANUFACTURERS

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to the following:

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Steel Framing and Furring:

Bostwick Steel Framing Co.
Dale Industries, Inc.
Gold Bond Building Products Div., National Gypsum Co.
Incor, Inc.
Marino Industries Corp.
United States Gypsum Co.

Grid Suspension Systems:

Chicago Metallic Corp.
National Rolling Mills Co.

Gypsum Boards and Related Products:

Centrex American Gypsum Co.
Domtar Gypsum Co.

Georgia-Pacific Corp.
Gold Bond Building Products Div., National Gypsum Co.
United States Gypsum Co.

STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS

General: Provide components which comply with ASTM C 754 for materials and sizes, unless otherwise indicated.

Concrete Inserts: Inserts designed for attachment to concrete forms and for embedment in concrete, fabricated from corrosion-resistant materials, with holes or loops for attachment of hanger wires and capability to sustain, without failure, a load equal to 3 times that imposed ceiling construction, as determined from testing per ASTM E 488, conducted by an independent testing laboratory.

Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.

Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

Angle-Type Hangers: Angles with legs not less than ⅞ inch wide, formed from 0.0635-inch-thick galvanized steel sheet complying with ASTM A 336, Coating Designation G90, with bolted connections and 5/16 inch diameter bolts.

Channels: Cold-rolled steel, 0.0598-inch minimum thickness of base (uncoated) metal and 7/16 inch wide flanges, protected with rust-inhibitive paint, and as follows:

Carrying Channels: 1½ inch deep, 475 lbs. per 1000 ft., unless otherwise indicated.

Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth of ⅞ inch, and minimum thickness of base (uncoated) metal as follows:

Thickness: 0.0329 inch, unless otherwise indicated.

Steel Resilient Furring Channels: Manufacturer's standard project designed to reduce sound transmission, complying with ASTM C 645 for material, finish and widths of face and fastening flange, fabricated to form ½ inch deep channel of the following configuration:

Single-Leg Configuration: Asymmetric-shaped channel, with face connected to a single flange by a single slotted leg (webs).

Double-Leg Configuration: Hat-shaped channel, with 1½ inch wide face connected to flanges by double slotted or expanded metal legs (webs).

Configuration: Either one indicated above.

Grid Suspension System: ASTM C 645, manufacturer's standard grid suspension system composed of main beams and cross furring members which interlock to form a modular supporting network.

Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth and minimum thickness of base (uncoated) metal as follows:

Depth: ⅞ inch.

Thickness: As indicated.

Furring Brackets: Serrated-arm type, adjustable, fabricated from corrosion-resistant steel sheet complying with ASTM C 645, minimum thickness of base (uncoated) metal of 0.0329 inch, designed for screw attachment to steel studs and steel rigid furring channels used for furring.

Steel Resilient Furring Channels: Manufacturer's standard product designed to reduce sound transmission, complying with ASTM C 645 for base metal, finish and widths of face and fastening flange, fabricated to ½ inch deep channel of the following configuration.

Single-Leg Configuration: Asymmetric-shaped channel with face connected to a single flange by a single slotted leg (web).

Double-Leg Configuration: Hat-shaped channel, with 1 ½ inch wide face connected to flanges by double slotted or expanded metal legs (webs).

Configuration: Either one indicated above.

Z-Furring Members: Manufacturer's standard zee-shaped furring members with slotted or nonslotted web, fabricated from hot-dip galvanized steel sheet complying with ASTM a 5255, Coating Designation G60; with a minimum base metal (uncoated) thickness of 0.0179-inch, face flange of 1 ¼ inch, wall-attachment flange of ⅞ inch, and of depth required to fit insulation thickness indicated.

Fasteners: Provide fasteners of type, material, size, corrosion resistance, holding power and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum drywall manufacturers for applications indicated.

GYPSUM BOARD

General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end joints.

Thickness: Provide gypsum board in thicknesses indicated, or if not otherwise indicated, in ⅝ inch thickness to comply with ASTM C 840 for application system and support spacing indicated.

Gypsum Wallboard: ASTM C 36, and as follows:

Type: Type X for fire-resistance-rated assemblies.

Edges: Tapered.

Thickness: ⅝ inch where indicated.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work where Type X gypsum wallboard is indicated include, but are not limited to the following:
Products: Subject to compliance with requirements, provide one of the following products where Type X gypsum wallboard is indicated:

"Gyprock Fireguard 'C' Gypsum Board"; Domtar Gypsum Co.
"Fire-Shield G"; Gold Bond Building Products Div., National Gypsum Co.
"SHEETROCK Brand FIRECODE 'C' Gypsum Panels"; United States Gypsum Co.

Gypsum Backing Board for Multi-Layer Applications: ASTM C 442 or, where backing board is not available from manufacturer, gypsum wallboard, ASTM C 36, and as follows:

Type: Type X for Fire-resistance-rated assemblies.

Edges: Manufacturer's standard.

Thickness: ⅝ inch, unless otherwise indicated.

Water-Resistant Gypsum Backing Board: ASTM C 630, and as follows:

Type: Type X for fire-resistant-rated assemblies.
Thickness: ⅝ inch, unless otherwise indicated.

Sound Proof Backing Board: ASTM C 630, and as follows:

Type: Celotex Sound Stop Board.
Thickness: ½ inch, unless otherwise indicated.

TRIM ACCESSORIES

Cornerbead and Edge Trim for Interior Installation: Comply with ASTM C 840 and the following:

Cornerbead formed from zinc alloy, with flanges knurled and perforated or of fine-mesh expanded metal.

Steel edge trim formed from galvanized steel, types per Fig. 1 of ASTM C 840 as follows:

"LC" Bead, unless otherwise indicated.

"LK" Bead with square nose for use with kerfed jambs.

"L" Bead where indicated.

"U" Bead where indicated.

Plastic Edge Trim: Manufacturers standard rigid or semi-rigid PVC moldings shaped to provide resilient contact of gypsum board edges with other construction; friction-fit, or pressure-sensitive adhesive mounting.

One-Piece Control Joint: Formed with perforated face flanges connected by vee-shaped slot, ¼ inch wide approximately 7/16 inch deep and covered with removable tape, fabricated from the following materials:

Roll-formed zinc.
Extruded vinyl.
Either roll-formed zinc or extruded vinyl.

Metal Cornerbead and Edge Trim for Exterior Ceilings: Comply with ASTM C 840 and the following:

Zinc edge trim formed from zinc alloy, type "LC" Bead per Fig. 1 of ASTM C 840 unless otherwise indicated.

Aluminum Edge Trim: Where indicated, provide manufacturer's standard extruded aluminum edge trim of profile shown or referenced by manufacturer's standard product designation, fabricated from aluminum alloy 6063 T5 complying with ASTM B 221, finished as follows:

Class I Clear Anodized Finish: AA-C12C22A42 (chemically cleaned; chemical etch, medium matte; 0.7 mil minimum thick clear anodic coating.

GYPSUM BOARD JOINT TREATMENT MATERIALS

General: Provide materials complying with ASTM C 475, ASTM C 840, and recommendations of manufacturer of both gypsum board and joint treatment materials for the application indicated.

Joint-Tape: Paper reinforcing tape, unless otherwise indicated.

Use pressure sensitive or staple-attached open-weave glass fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.

Setting-Type Joint Compounds: Factory-prepackaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

Where setting-type joint compounds are indicated for use as taping and topping compounds, use formulation for each which develops greatest bond strength and crack resistance and is compatible with other joint compounds applied over it.

For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.

For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by gypsum board manufacturer for this purpose.

Drying-Type Joint Compounds: Factory-prepackaged vinyl-based products complying with the following requirements for formulation and intended use.

Ready-Mix Formulation: Factory-premixed product.

Job-Mixed Formulation: Powder product for mixing with water at Project site.

Taping compound formulated for embedding tape and for first coat over fasteners and flanges of corner beads and edge trim.

Topping compound formulated for full (second) and finish (third) coats.

All-purpose compound formulated for use as both taping and topping compound.

MISCELLANEOUS MATERIALS

General: Provide auxiliary materials for gypsum drywall construction which comply with referenced standards and the recommendations of the manufacturer of the gypsum board.

Fastening Adhesive for Wood: ASTM C 557.

Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum board to steel framing.
Gypsum Board Screws: ASTM C 1002.

Gypsum Board Nails: ASTM C 514.

Asphalt Felt: ASTM D 226, Type I (No. 15).

Concealed Acoustical Sealant: Nondrying, nonhardening, non- skinning, nonstaining, nonbleeding, gunnable sealant complying with requirement specified in Division-7 section "Joint Sealers."

Sound Attenuation Blankets: 3" Unfaced mineral fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing); and as follows:

Mineral Fiber Type: Fibers manufactured from glass or slag.

Thermal Insulation: Material indicated below, of thickness and width to fill voids formed by Z-furring members:

Unfaced Mineral Fiber Blanket Insulation: Unfaced material fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing); and as follows:

Mineral Fiber Type: Fibers manufactured from glass or slag.

Polyethylene Vapor Retarder: ASTM D 4397, thickness and maximum permeance rating as follows:

6.0 mils, 0.13 perms.

Glass Mesh Mortar Unit Finishing Materials: Tape and joint compounds as recommended by glass mesh mortar unit manufacturer.

TEXTURE FINISH MATERIALS

Primer: Of type recommended by manufacturer of texture finish.

Finish for ceiling and walls as follows:

Walls, all wall surfaces:	Light Orange Peel
Exposed Finished Ceilings:	Medium Knock-Down
Bulkheads, horizontal & vertical surfaces:	Level 5 Smooth

PART 3 – EXECUTION

EXAMINATION

Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

PREPARATION

Ceiling Anchorages: Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling anchors in a manner that will develop their full strength and at spacing required to support ceiling.

Furnish concrete inserts and other devices indicated, to other trades for installation well in advance of time needed for coordination with other construction.

INSTALLATION OF STEEL FRAMING, GENERAL

Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.

Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar construction to comply with details indicated and with recommendations of gypsum board manufacturer, or if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.

Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement, at locations indicated below to comply with details shown on Drawings:

Where edges of suspended ceilings abut building structure horizontally at ceiling perimeters or penetration of structural elements.

Where partition and wall framing abuts overhead structure.

Provide slip or cushioned type joints as detailed to attain lateral support and avoid axial loading.

Do not bridge building expansion and control joints with steel framing or furring members; independently frame both sides of joints with framing or furring members or as indicated.

INSTALLATION OF STEEL FRAMING FOR SUSPENDED AND FURRED CEILINGS

Secure hangers to structural support by connecting directly to structure where possible; otherwise connect to cast-in concrete inserts or other anchorage devices or fasteners as indicated.

Do not attach hangers to metal deck tabs.

Do not attach hangers to metal roof deck.

Do not attach hangers to underside of concrete slabs with powder-actuated fasteners.

Do not connect or suspend steel framing from ducts, pipes, or conduit.

Keep hangers and braces 2 inches clear of ducts, pipes and conduits.

Sway-brace suspended steel framing with hangers used for support.

Install suspended steel framing components in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.

Wire Hangers: 0.1620 inch diameter (8 gage), 4 ft. on center.

Carrying Channels (Main Runners): 1½ inch, 4 ft. on center.

Rigid Furring Channels (Furring Members): 24 inches on center.

Installation Tolerances: Install steel framing components for suspended ceilings so that cross furring members or grid suspension members are level to within ⅛ inch in 12 ft. as measured both lengthwise on each member and transversely between parallel members.

Wire-tie or clip furring members to main runners and to other structural supports as indicated.

Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join man beam and cross furring members to each other and butt-cut to fit into wall track.

For exterior soffits provide cross-bracing and additional framing indicated or required to resist wind uplift.

INSTALLATION OF STEEL FRAMING FOR WALLS AND PARTITIONS

Install runners (tracks) at floors, ceilings, and structural walls and columns where gypsum drywall stud system abuts other construction.

Where studs are installed directly against exterior walls, install asphalt felt strips between studs and wall.

Installation Tolerances: Install each steel framing and furring member so that fastening surface do not vary more than ⅛ inch from plane of faces of adjacent framing.

Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings to provide support for gypsum board.

Install steel studs and furring in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.

For single- and double-layer construction: 16 inches on center.

Install steel studs so that flanges point in the same direction and gypsum boards can be installed in the direction opposite to that of the flange.

Frame door openings to comply with details indicated, with GA-219 and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on doorframes; install runner track section (for cripple studs) at head and secure to jamb studs.

Extend vertical jamb studs through suspended ceilings and attach to underside of floor or roof structure above.

Frame openings other than door openings to comply with details indicated, or if none indicated, in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

Install thermal insulation as follows:

Erect insulation vertically and hold in place with Z-furring members spaced 24 inches on center.

Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches on center.

At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw attach short flange of furring channel with standard width insulation panel and continue in regular manner. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

Until gypsum board is installed hold insulation in place with 10 inch staples fabricated from 0.0625 inch (16 gage) diameter tire wire and inserted through slot in web member.

Install polyethylene vapor retarder on interior framing members of exterior insulated walls to comply with the following requirements.

Extend vapor retarder to extremities of exterior insulated walls and to cover miscellaneous voids in insulated substrates, including those which have been stuffed with loose thermal insulation.

Seal vertical joints in vapor retarders over framing by lapping not less than 2 wall studs. Fasten vapor retarders to framing at top, end, and bottom edges, at perimeter of wall openings, and at lap joints; space fasteners 16 inches on center.

Seal joints in vapor retarder caused by pipes, conduits, electrical boxes and similar items penetrating vapor retarders with cloth or aluminized tape which bonds permanently to vapor retarder.

Repair any tears or punctures in vapor retarder immediately before concealment by application of gypsum board or other construction.

APPLICATION AND FINISHING OF GYPSUM BOARD, GENERAL

Gypsum Board Application and Finishing Standard: Install and finish gypsum board to comply with ASTM C 840.

Install sound attenuation blankets see section 07724-Building Insulation for installation.

Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.

Install ceiling boards across framing in the manner which minimizes the number of end-butt joints, and which avoids end joints in the central area of each ceiling. Stagger end joints at least 24 inches.

Install wall/partition boards in manner, which minimizes the number of end-butt joints or avoids them entirely where possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.

Locate either edge or end joints over supports, except in horizontal applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite side of partitions.

Attach gypsum board to steel studs so that leading edge or end of each board is attached to open (unsupported) edge of stud flange first.

Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

Form control joints and expansion joints at locations indicated, with space between edges of boards, prepared to receive trim accessories.

Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are braced internally.

Except where concealed application is indicated or required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. area, and may be limited to not less than 75 percent of full coverage.
Fit gypsum board around ducts, pipes, and conduits.

Where partitions intersect open concrete coffers, cut gypsum board to fit profile of coffers and allow ¼ to ½ inch wide joint for sealant.

Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide ¼ inch to ½ inch space and trim edge with "U" bead edge trim. Seal joints with acoustical sealant.

Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board over wood framing, with "floating" internal corner construction.

Where sound-rated drywall construction is indicated, seal construction at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim, and close off sound-flanking paths around or through construction, including sealing of partitions above acoustical ceilings.

For double-layer partition systems, construction above acoustical ceilings may be installed with base layer only.

Space fasteners in gypsum boards in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.

METHODS OF GYPSUM BOARD APPLICATION

Single-Layer Application: Install gypsum wallboard as follows:

On ceilings apply gypsum board prior to wall/partition board application to the greatest extend possible.

On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated, provide sheet lengths which will minimize end joints.

On partitions/walls 8'-1" or less in height apply gypsum board horizontally (perpendicular to framing); use maximum length sheets possible to minimize end joints.

On Z-furring members apply gypsum board vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid wall finishes, install gypsum backing board.

In "dry" areas install gypsum backing board or wallboard with tapered edges taped and finished to produce a flat surface.

Double-Layer Application: Install gypsum backing board for base layer and gypsum wallboard for face layer.

On ceilings apply base layer prior to application of base layer on walls/partitions; apply face layers in same sequence. Offset joints between layers at least 10 inches. Apply base layer joints.

On partitions/walls apply base layer and face layers vertically (parallel to framing) with joints of base layer over supports and face layer joints offset at least 10 inches with base layer joints.

On Z-furring members apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.

Acoustical Tile Base: Where drywall is base for adhesively applied acoustical tile, install gypsum backing board.

Provide either V-joint type backing board or tape and finish joints to produce a flat surface.

Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:

Fasten with screws.

Fasten to steel framing with adhesive and supplementary screws.

Fasten to wood supports with single nailing.

Fasten to wood supports with double nailing.

Fasten to wood supports with adhesive and supplementary nails or screws.

Double-Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer as follows:

Fasten both base layers and face layers separately to supports with screws.
Fasten base layers with screws and face layer with adhesive and supplementary fasteners.

Fasten base layers to wood supports with nails and face layer with adhesive and supplementary fasteners.

Direct-Bonding to Substrate: Where gypsum board is indicated to be directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum board until fastening adhesive has set.

Exterior Soffits and Ceilings: Apply exterior gypsum soffit board perpendicular to supports, with end joints staggered over supports. Install ¼ inch wide open space where boards abut other construction.

Fasten with cadmium-plated screws, or with galvanized or aluminum nails where supports are nailable.

INSTALLATION OF DRYWALL TRIM ACCESSORIES

General: Where feasible, use the same fasteners to anchor time accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.

Install corner beads of the types indicated at external corners.

Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where "U" bead (semi-finished type) is indicated.

Install "LC" bead where drywall construction is tightly abutted to other construction and back flange can be attached to framing or supporting substrate.

Install "LK" bead where substrate is kerfed to receive long flange of trim.

Install "L" bead where edge trim can only be installed after gypsum board is installed.

Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

Install U-bead where indicated, and where exterior gypsum board edges are not covered by applied moldings or indicated to receive edge trim with face flanges covered with joint compound.

Install plastic edge trim where indicated on wall panels at juncture with ceilings.

Install control joints at locations indicated, or if not indicated, at spacings and locations required by referenced gypsum board application and finish standard, and approved by the Architect for visual effect.

Install H-molding in exterior gypsum drywall construction where control joints are indicated.

FINISHING OF DRYWALL

General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.

Prefill open joints and rounded beveled edges, if any, using setting-type joint compound.

Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.

Finish interior gypsum wallboard by applying the following joint compounds in 3 coats (not including prefill of opening in base), and sand between coats and after last coat:

Embedding and First Coat: Ready-mix drying-type all-purpose or taping compound.
Fill (Second) Coat: Ready-mix drying-type all-purpose or topping compound.
Finish (Third) Coat: Ready-mix drying-type all-purpose or topping compound.

Finish exterior gypsum soffit board by using setting-type joint compounds to prefill joints, embed tape, and to apply first, fill (second) and finish (third) coats; smooth each coat before joint compound hardens to minimize need for sanding; sand between coats and after finish coat.

Painting of exterior gypsum soffit board after finish coat has dried is specified in Division-9 Section "Painting."

Base for Acoustical Tile: Where gypsum board is indicated as a base for adhesively-applied acoustical tile, install tape and 2-coat compound treatment, without sanding.

Water-Resistant Gypsum Backing Board Base for Ceramic Tile: Comply with ASTM C 840 and manufacturer's recommendations for treatment of joints behind tile.

Water-Resistant Backing Board Base for Ceramic Tile: Finish joints between water-resistant backing board with tape and setting-type joint compound to comply with gypsum board manufacturer's recommendations and installation standards referenced in Division-9 Section "Tile."

Partial Finishing: Omit third coat and sanding on concealed drywall construction which is indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.

PROTECTION

Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall construction being without damage or deterioration at time of Substantial Completion.

All exposed walls to be finished, ready for primer.

END OF SECTION 09250

SECTION 09510 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

DESCRIPTION OF WORK

Extent of each type of acoustical ceiling is shown and scheduled on drawings.

Types of acoustical ceilings specified in this section include the following:

Acoustical panel ceilings, exposed suspension.

QUALITY ASSURANCE

Installer: Firm with not less than three years of successful experience in installation of acoustical ceilings similar to requirements for this project and which is acceptable to manufacturer of acoustical units, as shown by current written statement from manufacturer.

FM Compliances: Class I.

UL-Rated Assemblies: Where acoustical ceilings are components of floor, roof or beam assemblies indicated for fire-resistance rating, including those required for compliance with governing regulations, provide acoustical materials and application or suspension bearing UL Classification Marking for applicable UL design number listed in UL "Fire Resistance Index." Where required by applicable UL design, provide protection materials for fixtures and ducts.

UL Fire Hazard Classification: Where acoustical ceilings are indicated to comply with fire hazard classification for flame spread, and including fuel contribution and smoke development classifications where indicated, provide acoustical materials which have been tested, rated and labeled by UL for indicated ratings as listed in "Classified Building Materials Index" by UL.

Classification: Maximum of 25 for flame spread, fuel contributed, and smoke developed.

SUBMITTALS

Product Data: Manufacturer's product specifications and installation instructions for each acoustical ceiling material required, and for each suspension system, including certified laboratory test reports and other data as required to show compliance with these specifications.

Include manufacturer's recommendations for cleaning and refinishing acoustical units, including precautions against materials and methods which may be detrimental to finishes and acoustical performance.

Samples: Set of 12" square samples for each acoustical unit required, showing full range of exposed color and texture to be expected in completed work.

Set of 12" long samples of each exposed runner and molding.

Maintenance Stock: At time of completing installation, deliver stock of maintenance material to Owner. Furnish full size units matching units installed, packaged with protective covering for storage, and identified with appropriate labels.

Furnish amount equal to 1 box minimum or 2.0% of acoustical units and exposed suspensions installed.

JOB CONDITIONS

Space Enclosure: Do not install interior acoustical ceilings until space enclosed and weatherproof, and until wet-work in space completed and nominally dry, and until work above ceilings completed, and until ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

PART 2 - PRODUCTS

CEILING UNITS

Acoustical Panels:

General: Provide manufacturer's standard lay-in panels of type recommended by manufacturer for application indicated. Provide sizes shown by reflected ceiling plans or, if not otherwise indicated, 24" x 24" grid-size panels, with white washable finish.

Mineral Fiber Acoustical Panels: Provide units not less than 3/4" thick and of density not less than 10 lbs. per cu. ft., medium-coarse non-directional texture, NRC 0.50 to 0.60, STC 35 to 39, light reflectance over 75%.

Product/Manufacturer: Provide the following:

Armstrong Ultima 1911 Beveled Tegular 24x24x3/4” with 15/16” grid, white tile & grid.

See reflected ceiling plan for layouts

CEILING SUSPENSION MATERIALS

General: Comply with ASTM C 635, as applicable to type of suspension system required for type of ceiling units indicated. Coordinate with other work supported by or penetrating through ceilings, including light fixtures, HVAC equipment, and partition system (if any).

Structural Class: Intermediate-duty system.

High-Humidity Finishes: Where suspension system supports exterior ceiling or soffit, and also where interior space is indicated as "High-Humidity" area of project, comply with ASTM C 635 requirements for "Severe Environment Performance" for "High-Humidity Test".

Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung.

Hanger Wires: Galvanized carbon steel, ASTM A 641, soft temper, prestretched, yield-stress load of at least 3 times design load, but not less than 12 gage (0.106").

Type of System: Either direct-hung or indirect-hung suspension system, at Contractor's option.

Carrying Channels: 1-1/2" steel channels, hot-rolled or cold-rolled, not less than 0.475 lbs. per lin. ft.

System Manufacturer: Same as acoustical unit manufacturer or one of the following:

Chicago Metallic corp.
Donn Corp.

Edge Moldings: Manufacturer's standard channel molding for edges and penetrations of ceiling, with single flange of molding exposed, white baked enamel finish unless otherwise indicated.

Concealed Suspension System: Manufacturer's standard galvanized steel system of runners, cross runners, splines and accessories.

Access: Manufacturer's standard total access system, either up-acting or down-acting (each 12 x 12 unit independently removable).

Exposed Suspension System: Manufacturer's standard exposed runners, cross runners and accessories, of types and profiles indicated, with exposed cross runners coped to lay flush with main runners.

Finish of Exposed Members: Provide uniform factory-applied finish on exposed surfaces of ceiling suspension system, including moldings, trim and accessories.

Finish: Manufacturer's standard baked enamel finish, white unless otherwise selected by Architect.

Finish: Natural anodized aluminum, 0.4-mil coating; NAAMM AA-M21C21A31.

MISCELLANEOUS MATERIALS

Tile Adhesive: Comply with ASTM D 1779 or FS MMM-A-00150, type recommended by tile manufacturer, bearing UL label for Class 0 - 25 flame spread.

Tile Fasteners: Cadmium plated, type recommended by tile manufacturer, but for not less than 1/2" penetration of substrate.

Tile Joint Splines: Type recommended by tile manufacturer to coordinate with tile installation support system and installation procedure.

Edge Trim Molding: Metal or extruded PVC plastic, of types and profiles indicated, white finish unless otherwise indicated.

Hold-Down Clips: Where required for wind uplift resistance or fire resistance rating, provide standard spring steel clips, except provide accessible type at locations indicated on drawings.

Acoustical Sealant: Heavy-bodied, non-shrinking, non-drying, non-sag mastic compound intended for interior sealing of concealed construction joints.

PART 3 - EXECUTION

PREPARATION

Coordination: Furnish layouts for inserts, clips, or other supports required to be installed by other trades for support of acoustical ceilings.

Test-Substrates: Before installing adhesively applied tile on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders, and comply with reflected ceiling plans wherever possible.

INSTALLATION

General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and industry standard applicable to work.

Arrange acoustical units and orient directionally-patterned units (if any) in manner shown by reflected ceiling plans.

Install tile with pattern running in one direction.

Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers near each end and spaced 4'-0" along each carrying channel or direct-hung runner, unless otherwise indicated, leveling to tolerance of 1/8" in 12'-0".

Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices which are secure and appropriate for substrate, and which will not deteriorate or fail with age or elevated temperatures.

Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.

Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.

Screw attach molding to substrate at intervals not over 16" o.c. and not more than 3" from ends, leveling with ceiling suspension system to tolerance of 1/8" in 12'-0". Miter corners accurately and connect securely.

Install acoustical tile in coordination with suspension system. Place splines of flanges of suspension system into kerfed edges, or insert tile tongues into tile grooves, so that every tile-to-tile joint is closed by double lap of material.

Fit adjoining tile to form flush, tight joints. Scribe and cut for accurate fit at borders and around penetrating work.

Hold tile field in compression by inserting leaf-type spring steel spacers between tile and moldings, spaced at 12" o.c.

Fabricated access units from special suspension system access members and tile units modified as required to allow for removal of access units.

Install acoustical tile by cementing to substrate, using amount of adhesive and procedure recommended by tile manufacturer. Install splines in joints between tiles and level to 1/8" in 12'-0" tolerance. Maintain tight butt joints, aligned both directions, and coordinated with ceiling fixtures. Scribe and cut tile to fit accurately at ceiling edges and penetrations.

Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

Install hold-down clips in areas indicated, and in areas where required by governing regulations or for fire-resistance ratings, space as recommended by panel manufacturer, unless otherwise indicated or required.

ADJUST AND CLEAN

Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members, comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09510

SECTION 09650 - RESILIENT FLOORING

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of resilient flooring and accessories is shown on the drawings and in schedules.

The following applications of resilient flooring are required:

Luxury Vinyl Flooring.

Rubber base.

QUALITY ASSURANCE

Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants and leveling compounds.

SUBMITTALS

Product Data: Submit manufacturer's technical data and installation instructions for each type of resilient flooring and accessory.

Maintenance Instructions; Resilient Flooring: Submit manufacturer's written instructions for recommended maintenance practices for each type of resilient flooring and accessories.

Replacement Material: After completion of work, deliver to project site replacement materials from same manufactured lot as materials installed, as follows:

Not less than one box for each 50 boxes or fraction thereof, for each type, size, and color installed.

JOB CONDITIONS

Maintain minimum temperature of 65 degrees F in spaces to receive flooring for at least 48 hours prior to installation, during installation and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 degrees F in areas where work is completed.

Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS

Available Manufacturers: Subject to compliance with requirements, provide products of one of the following:

Luxury Vinyl Flooring:
Armstrong

Wall Base:
Johnsonite Rubber Co., Flooring Accessories Div.
Roppe

MATERIALS

Luxury Vinyl Flooring:
Solid Vinyl tile LVT 48” x 9”
Natural Creations by Armstrong or approved equal.
ASTM F 1700, Class III Type B embossed surface
.160 inch (4.0mm) thickness, .020 inch (.5mm) wear layer
UV-cured polyurethane
No polish, no buff, no spray buff, no traditional polish finish.

Accessories:

Resilient Wall Base: Provide Armstrong rubber coved base complying with FS SS-W-40, Type II, with matching end stops and preformed or molded corner units, as follows:
Height: 4"
Thickness: 0.080" gage
Style: Standard top-set cove adjacent to floors scheduled to receive hard finish. Provide base in manufacturer's standard long-length coiled roll stock.
Color: To be selected from manufacturers standards.

Adhesives (Cements): As recommended by flooring manufacturer to suit material and substrate conditions.

For resilient sheet flooring, provide epoxy type adhesive of type recommended by flooring manufacturer.

Clean per manufacturers recommendation prior to substantial completion, after cure time

Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.

Leveling Compound: Latex type as recommended by flooring manufacturer.

PART 3 - EXECUTION

PREPARATION

Broom clean or vacuum surfaces to be covered and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.

Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in subfloors.

Perform bond and moisture tests on concrete slabs to determine that concrete surfaces are sufficiently cured, dried and ready to receive flooring.

Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

INSTALLATION

General:

Install flooring using method indicated in strict compliance with manufacturer’s recommendations. Extend flooring into toe spaces, door reveals, and into closets and similar openings.

Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent-marking device.

Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.

Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll flooring at perimeter of each covered area to assure adhesion.

Tile Floors:

Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of the room are equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.

Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged. Cut tile neatly to and around all fixtures. Broken, cracked, chipped or deformed tile are not acceptable.

Lay tile with grain in quarter turn pattern or match to existing.

Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

Accessories:

Unroll coiled base material and allow to lay flat for not less than 24 hours at a temperature of 70 degrees F. or warmer immediately prior to installation.

Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in as long lengths as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to backing throughout the length of each piece, with continuous contact at horizontal and vertical surfaces.

Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at all unprotected edges of flooring unless otherwise shown.

Apply butt type metal edge strips where shown on drawings, and prior to resilient flooring. Secure units to substrate with countersunk stainless steel anchors, complying with manufacturer's recommendations.

Apply resilient accessories to stairs as indicated and in strict accordance with manufacturer's installation instructions.

CLEANING AND PROTECTION

Remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring from damage by covering.

Finishing: After completion of project and just prior to final inspection of work, thoroughly clean floors and accessories.

END OF SECTION 09650

SECTION 09680 - CARPETING

PART 1 - GENERAL

DESCRIPTION OF WORK

The specific requirements for each type of carpeting are indicated in Part 2 – Products. Carpeting is defined to include (but is not necessarily limited to) carpet, seaming, edge treatment and anchorages (if any).

The extent of each type of carpet is shown on the drawings and in schedules.

QUALITY ASSURANCE

The Installer shall be experienced in the supervision of carpet installation, with at least five years experience in this type of work. The actual work shall be done by qualified and experienced installers working under his supervision or under the supervision of an experienced workroom supervisor who has also been doing this type of work for five years.

INSTALLATION REQUIREMENTS

Substrate: Installer must examine the substrate, and the conditions under which the carpeting is to be installed and notify the Architect in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

Measure each space to receive carpeting, as a basis of supplying, cutting and seaming the carpet. Do not scale the Architect's drawings or calculate sizes from dimensions shown.

Carpet Overrun: Provide production overrun on each carpet, amounting to 20% excess over the amount necessary to ensure complete installation without excess seams. Deliver all unused carpet and large scraps to the Owner for his "attic stock." Dispose of scraps less than 2 sq. ft. in area, or less than 8" in width.

Delivery: Deliver all carpet to the job site in the original mill wrappings and mark each roll with its register number as soon as it is delivered to the job site. Protect from damage, dirt, stains, and moisture.

JOB CONDITIONS

Coordinate installation of carpeting with preparation for project substantial completion and closeout. Delay installation until space enclosures and other general finish work have been completed and until continuing construction traffic is carpeted areas will be minimal; and until ambient conditions are being maintained by operation of HVAC system to comply with specified requirements, include carpet manufacturer’s specifications.

SUBMITTALS

Manufacturer's Data: Carpeting: Submit two copies of manufacturer's data on carpet and carpeting materials, showing that materials comply with the requirements of data sheets and specifications, also including installation instructions, maintenance recommendations, and letter stating flammability rating of the carpet material.
Samples: Carpeting: Submit one 12" square sample of each type, color, and pattern of carpet required. Submit one 6" long sample of carpet edge guard stripping.

Overrun Stock: Carpeting: Deliver overrun stock and scraps of unused carpet to Owner's attic stock, as directed by the Owner, in accordance with specified requirements.

Seaming Diagrams: Submit carpet layout drawings at same scale as contract drawings showing carpet seam locations, direction of pattern and nap, and location and type of edge treatment.

PART 2 - PRODUCTS

CARPET

Manufacturers: Shaw Contracting Group or approved equal.

CPT	Hub Tile, style 5T459 Collection: Encounter Carpet Type: Tile Size: 24” x 24” Color: selection by owner/architect

Install all carpet tiles per manufacturer’s recommendations.

Rubber edge guards: Provide Roppe edge guard #42 carpet edging 3/16” at all transition from carpet tile to concrete flooring and LVT or approved equal or recommended by carpet tile manufacturer.

Verify all locations and provide transition strips at all carpet to other flooring materials.

CARPET ACCESSORY MATERIALS

Carpet Edge Guard: Manufacturer's standard bend-down type of formed or extruded aluminum carpet edge stripping. Form units with concealed teeth to grip the carpet from below, holes for nailing to the substrate, and tapered smooth safety to bar to be bent down over the carpet to secure it in the stripping.
Colors will be specified from standard colors available.

Installation Adhesive: Provide adhesive recommended by carpet or cushion manufacturer for adequate adhesion and water resistance at each application but which will allow removal of carpet/cushion with minimum damage to carpeting, materials and substrate.

Seaming Cement: Hot-melt seaming adhesive of the type recommended by the carpet manufacturer for taping seams and buttering cut edges of carpet backing (and bottom of face pile) at seams, to form secure seams and eliminate pile loss at seams.
Contact Bond Cement: Solvent-based cement recommended by carpet manufacturer.

Miscellaneous Materials: Provide the types of seaming tape, thread, nails, adhesives, and other necessary items recommended by the carpet manufacturer for the conditions of installation and use, without failure during the life of the carpet.

PART 3 - EXECUTION

INSTALLATION

General:

Vacuum substrate immediately prior to carpet installation and remove all deleterious substances which would interfere with the installation or be harmful to the work.

Immediately prior to carpet installation sweep substrate with bristle broom. Wet mop floor with warm water and sweep again after mopping.

Comply with manufacturer's instructions and recommendation. Place seams in the directions indicated, and as accepted on shop drawings, (if any). Maintain direction of pattern and texture, including lay of pile. Do not seam weft to warp, except as directed.

Extend carpet under open-bottomed and raised-bottom obstructions and under removable flanges of obstructions. Extend carpet into closets and alcoves of rooms indicated to be carpeted unless another floor finish is indicated for such spaces. Extend carpet under all movable furniture and equipment, unless otherwise indicated.

Provide cut-outs as indicated for removable access devices in the substrate. Bind edges as neatly as possible and secure both sides of cuts to the substrate. Use double-faced tape on carpet cut-outs which must be lifted from the substrate to gain access to the devices, unless otherwise indicated. Cut only three sides wherever it is feasible to provide a carpet flap in lieu of a fully removable cut-out.

Install carpet edge guard at every location where edge of carpet is exposed to traffic, except where another device, such as an expansion joint cover system or threshold, is indicated with an integral carpet binder bar.

Glued-Down Installation:

Install a test sample to demonstrate proper adhesion of the bonding system.

Cut and fit sections of carpet for each room or space prior to application of adhesive.

Apply adhesive in accordance with manufacturer's instructions, complying with procedure demonstrated to be satisfactory by test sample. Butt carpet seams and edges tightly together, eliminate air pockets, and roll to ensure uniform bond everywhere.

Spread adhesive with trowel having 1/8" deep "V" notches. Keep trowel clean and maintain notch size throughout job.

Remove adhesive from face promptly upon exposure.

Test concrete floors for moisture content by sealing an inverted glass tumbler or plate to the floor with putty. Allow glass to remain in place at least 24 hours. If moisture condenses on the inside of glass, too much moisture is present in the floor for a successful installation. Before starting the installation, test an area with the adhesive and the carpet to determine the open-time and bond.

CLEANING, PROTECTION AND FOLLOW-UP SERVICE

Cleaning and Protection:

Remove debris from installation, carefully sorting pieces to be saved from scraps to be disposed.

Vacuum carpet with a commercial machine, with rotating agitator in the nozzle. Remove soiled spots.

Advise the Owner of areas which should be protected during the remainder of the construction period, so that carpet will be in undamaged and unsoiled condition at the time of acceptance. Recommend the type non-staining cover material that should be used for protective cover.

Repair Work:

Repair seams, joints and edges, if required, once the original installation is completed. The exact time for this work shall be left to the discretion of the Architect but shall be within 12 months after final approval of the finished installation. Fourteen-day notice for this work shall be given by the Architect, so that the Installer can make necessary arrangements for same.

Extend warranty for and additional one-year period covering further repair of seams, puckering, and any other defects that might be directly pointed to defect in workmanship.

Cleaning Kit: Furnish one "Service Master" Spotting Kit, including written directions for removing all types of stains.

Property Damage: Any damage done to paint, walls, woodwork, doors, etc. shall be the responsibility of the Carpet Installer.

END OF SECTION 09680

SECTION 09900 - PAINTING

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of painting work is shown on the drawings and schedules, and as herein specified.

The work includes painting and finishing of interior and exterior exposed items and surfaces throughout the project, except as otherwise indicated.

Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of the work.

"Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime intermediate or finish coats.

Paint all exposed surfaces whether or not colors are designated in "Schedules", except where the natural finish of the material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If color or finish is not designated, the Architect will select these from standard colors available for the materials systems specified.

Paint Fire Retardant Plywood with flat latex intumescent fire-retardant paint to meet ASTM E-84 (NFPA 255) Class “A” standards.

PAINTING NOT INCLUDED

The following categories of work are not included as part of the field-applied finish work or are included in other sections of these specifications.

Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal, hollow metal work, and similar items. Also, for fabricated components such as architectural woodwork, wood case work, and shop-fabricated or factory-built mechanical and electrical equipment or accessories.

Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer finishing is specified for such items as (but not limited to) metal toilet enclosures, pre-finished partition systems, acoustic materials, architectural woodwork and casework, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets, elevator entrance frames, doors and equipment.

Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.

Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate,

copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.

Operating Parts and Labels:

Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated.

Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

SUBMITTALS

Manufacturer's Data; Painting: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use. List each material and cross-reference to the specific paint and finish system and classification. Identify by manufacturer's catalog number and general classification.

Samples: Provide three actual paint and stain samples for each paint color and stain to be used on the project. Samples to be approved by Interiors Consultant prior to use on the project.

DELIVERY AND STORAGE

Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and the following information:

Name or title of Material.
Fed. Spec. number, if applicable.
Manufacturer's stock number and date of manufacturer.
Manufacturer's name.
Contents by volume, for major pigment and vehicle constituents.
Thinning instructions.
Application instructions.
Color name and number.

JOB CONDITIONS

Apply water-base paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F. and 95 degrees F. unless otherwise permitted by the paint manufacturer's printed instructions.

Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions. Painting

may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

COLORS AND FINISHES

Schedule of Coating Systems: Paint surface treatments and finishes for each material to be painted or finished are indicated in the Schedule of Coating Systems appearing at the end of this section.

Colors: All paint colors shall be selected by the owner.

Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify the Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

MATERIAL QUALITY

General:

Provide the best quality grade of the various types of coatings as regularly manufactured by approved paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard best grade product will not be acceptable.

Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer and use only to recommended limits.

Comparable first-line products of the following manufacturers are acceptable:

Sherwin Williams

PART 3 - EXECUTION

SURFACE PREPARATION

General: Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.

Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.

Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.

Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block, cement plaster and cement-asbestos board to be painted by removing all efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.

Wood:

Clean wood surfaces to be painted of all dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view and dust off. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling, etc.

Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.

Galvanized Surfaces: Clean free of oil and surface contaminants with an acceptable non-petroleum-based solvent.

MATERIALS PREPARATION

General:

Mix and prepare painting materials in accordance with manufacturer's directions.

Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

Stir materials before application to produce a mixture of uniform density and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

APPLICATION

General:

Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the substrate and type of material being applied.

Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.

Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.

Finish exterior doors on tops, bottoms and side edges the same as the exterior faces, unless otherwise indicated.

Sand lightly between each succeeding enamel or varnish coat.

Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.

Minimum Coating Thickness: Apply each material at not less than the manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

Prime Coats: Apply a prime coat of material which is required to be painted or finished, and which has not been prime coated by others.

Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

Transparent (Clear) Finishes: Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

Provide satin finish for final coats, unless otherwise indicated.

Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

CLEAN-UP PROTECTION

Clean-Up: During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each workday.

Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finish surfaces.

Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to the Architect.

Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

SCHEDULE OF COATING SYSTEMS

Refer to Finish Schedule Legend for additional coating system requirements. Provide Sherwin Williams colors to match those specified as selected by owner:

System SGE, Semi-Gloss Enamel:
- 1st Coat: Sherwin Williams Kem Kromik B50WZ0001
- 2nd Coat: Sherwin Williams Pro Classic Waterborne B31W51 (Steel Frames).
- 3rd Coat: Sherwin Williams Pro Classic Waterborne B31W51 (Steel Frames).
- Contractor to caulk and paint all metal frames.
- Apply to the following interior surfaces:
  - Steel doors and frames.
  - Miscellaneous metal surfaces not otherwise designated, including exposed steel columns rolled, spray-painted door closer, electric panels, wall grilles and diffusers, metal access doors.

System EE, - Eggshell Latex Enamel:
- 1st Coat: Sherwin Williams Harmony Interior Latex Primer, B11W00900.
- 2nd Coat: Sherwin Williams Harmony Eggshell B9W951.
- 3rd Coat: Sherwin Williams Harmony Eggshell B9W951.
- Apply to the following interior surfaces:
  - Gypsum wallboard walls.
  - Gypsum wallboard ceilings.

System FLE, Flat Latex Enamel:
- 1st Coat: Sherwin Williams Harmony Interior Latex Primer, B11W00900.
- 2nd Coat: Sherwin Williams Harmony Flat Latex B5W951.
- 3rd Coat: Sherwin Williams Harmony Flat Latex B5W951.
- Apply to the following surfaces:
  - Gypsum wallboard ceilings, soffits.

System EOP:
- 1st Coat: Sherwin Williams Kem Kromik Primer for Metal, B50WZ0001.
- 2nd Coat: Sherwin Williams SWP Exterior Gloss Oil Base Paint, A02W00026.
- 3rd Coat: Sherwin Williams SWP Exterior Gloss Oil Base Paint, A02W00026.
- Apply to the following surfaces:
  - Exterior hollow metal doors and frames.
  - Steel lintels.
  - Misc. Steel

System TVF, Transparent Varnish System:
- 1st Coat: S-W Sher-Wood Fast-Dry Filler Open Grain Filler
- 2nd Coat: S-W Wood Classics Interior Oil Stain A-49-200 Series
- 3rd Coat: S-W Wood Classics Fast Dry Sanding Sealer B26V43
- 4th Coat: S-W Wood Classics Waterborne Polyurethane Satin, A68 Series
  - Standing and running trim.
  - Miscellaneous exposed hardwood or hardwood veneer.

END OF SECTION 09900

SECTION 10661 – WALL PROTECTION SYSTEMS

PART 1 - GENERAL

DESCRIPTION OF WORK

Work included consists of surface-mounted corner guard units installed at locations shown on drawings, sometimes by the abbreviation "CG" and at all outside corners.

QUALITY ASSURANCE

Manufacturer's Instruction: In addition to the requirements of these specifications, comply with manufacturer's instructions and recommendations for all phases of the work, including preparation of substrate, applying materials, and protection of installed units.

Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to insure proper fitting of the work. However, do not delay job progress; allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the work.

Inserts and Anchorages: Furnish inserts and anchoring devices which must be built into wall construction for the installation of all wall protection systems. Provide setting drawings, templates, instructions and directions of installation of anchorage devices. Coordinate delivery with other work to avoid delay.

SUBMITTALS

Shop Drawings: Submit detailed shop drawings showing layout of wall protection systems and all special connections, jointing, and accessories.

Samples: Submit 3 samples of each type of wall protection system, not less than 6" long for Architect's review and full set of manufacturer’s standard color for Architect’s selection.

PART 2 - PRODUCTS

MATERIALS

Corner Guards (CG): Corner guards shall be 2” wing size by 4’-0” height stainless steel type 304, 16 gauge. Surface mount with heavy duty adhesive and stainless-steel screws. At end wall conditions in lieu of using 2 corner guards use surface mount stainless steel end wall protectors. Install units from top of base typical, verify. Install units at all locations as shown on floor plan noted as CG.

Product: Inpro Architectural Products, Surface Mounted Stainless Steel Corner Guard & End Wall Protectors
Use PL Premium Heavy Duty Adhesive & stainless steel screws provided by supplier for installation.

Accessories and Fasteners: Manufacturer’s standard items as required for the installation shown.
Corner Guards: 7 (seven) 2”x2”x4’-0” length at locations shown on plan

PART 3 - EXECUTION

INSTALLATION

Deliver retainer assemblies before installation of wall begins.

Install structural aluminum support base at bottom of retainer for support of vinyl cove base.

Install retainer assemblies prior to application of drywall. Install vinyl insert strips after painting or wall covering has been completed.

Remove protective coating and clean underlying surfaces immediately prior to acceptance of the work.

END OF SECTION 10661

SECTION 12400 – CABINET & STORAGE CASEWORK

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of casework is indicated on drawings. Casework and countertop shall be supplied by contractor and installed by contractor. General contractor shall provide all required blocking in walls and hardware for installation of casework.

Cabinet Construction shall be full overlay construction.

Extent of cabinet, storage casework and plastic laminated millwork items are shown on drawings.

Work includes the fabrication and installation of a standard system of casework furniture components of base cabinet, counter tops, wall cabinets, storage cabinets, shelf units and other units as indicated.

Sinks, faucets, strainers/tail pieces, electrical outlets and similar items attached to the casework, incorporated as part of the work, shall be furnished, and install under other sections except as indicated on drawings.

QUALITY ASSURANCE

Single Source Responsibility: Provide cabinet and storage casework with tops and other miscellaneous items manufactured or furnished by same cabinet and storage furniture company for single responsibility.

Casework Manufacturer shall have at least 5 years experience and have specialized in casework manufacturing similar to those required for this project.

Catalog Standards: No manufacturer's catalog numbers are shown on drawings. Only dimensions of units are indicated to identify casework sizes.

The use of dimensions and specific requirements set forth in drawings and specifications are not intended to preclude the use of any other acceptable manufacture's product or procedures which may be equivalent but are given for purpose of establishing standard of design and quality for material, construction, and workmanship.

All manufactured casework shall be pre-engineered and cataloged to rigid modular-matrix sizing allowing for future interchange of components or entire units. Manufacturers submitting for approval must provide printed catalog information documenting this performance feature; no exceptions will be allowed.

Manufactured casework systems must conform to design, quality of materials workmanship and function as shown on drawing and specified herein. In the absence of a printed specification, minimum quality standards shall be in accordance with AWI Section 1600B, Sixth Edition, Version 1.1, no exceptions will be permitted; additional requirements shall be as specified herein.

SUBMITTALS

Product Data: Submit manufacturer's data and installation instructions for each type of casework furniture unit.

Submit product test data, performed and certified by an independent testing agency, covering the following areas of product performance:

Base cabinet construction/racking test.
Wall cabinet construction/racking test.
Cabinet corner/joinery strength test.
Wall cabinet construction/static load test.
Drawer corner/joinery strength test.
Drawer construction/static load test.
Cabinet adjustable shelf and support device/static load test.
Cabinet interior, exterior and edging materials/acid resistancy tests.

Samples: Submit samples of specified finishes, including plastic laminate and edging material. Samples will be reviewed by Architect for color, texture, and pattern only. Compliance with other specified requirements is exclusive responsibility of Contractor.

Shop Drawings: Submit shop drawings for casework furniture showing plans, elevation, ends, cross-sections, location and type of service fixtures. Show details and location of anchorages and fitting to floors, walls, and base. Include layout of units with relation to surrounding walls, doors, windows, and other building components.

Coordinate shop drawings with other work involved.

PRODUCT HANDLING

Deliver casework furniture only after wet operations in building are completed.

Store completed casework furniture in a ventilated place, protected from the weather, with relative humidity therein of 50% or less at 70°F.

Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

WARRANTY

The entire installation shall be guaranteed for a period of three years from the date of Substantial Completion against defects in material and workmanship. The guarantee shall cover repair or replacement, without cost to the Owner, of all items which become defective within the three-year period. Damage to the equipment caused by improper operation or misuse is not covered by this guarantee.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURERS

Woodwork Fabricators: Shall be selected from owners' representative. All casework supplied by owner.

HIGH PRESSURE DECORATIVE LAMINATE MANUFACTURERS

Manufacturer: Subject to compliance with requirements, provide high pressure decorative laminates from the following:

Nevamar
Wilson Art
Formica

LAMINATED PLASTIC CASEWORK

Definitions: the following definitions apply to laminated plastic casework units:

Exposed portions of casework include surfaces visible when doors and drawers are close. Bottoms of cases more than 4'-0" above floor shall be considered as exposed. Visible members in open cases or behind glass doors also shall be considered as exposed portions.

Horizontal Surfaces other than tops: GP-50 (.050" nominal thickness).

Chemical Resistant Countertops: H-4 (HGL) (0.37" nominal thickness)

Countertops: PF-42 (.042" nominal thickness).

Vertical Surfaces: GP-28 (.028" nominal thickness).

Semi-exposed portion of casework includes those members behind opaque doors, such as shelves, divisions, interior faces of ends, case back, drawer sides, backs and bottoms and back face of doors. Tops of cases 6'-6" or more above floor shall be considered semi-exposed.

Surface material: GP-28 (.028" nominal thickness).

Edges: 3 mm PVC.

Concealed portions of casework include sleepers, web frames, dust panels and other surfaces not usually visible after installation.

Exposed Materials: Do not use exposed faces of lighter-than-average color joined with exposed faces of darker-than-average color. Do not use two adjacent faces which are noticeably dissimilar in color, figure and natural character markings.

All exposed exterior vertical surfaces finished with high-pressure plastic laminate to meet, or exceed NEMA standards for vertical grade, high-pressure plastic laminate.

Color selections shall be made from manufacturer's full range of current standard offering.

Edge Banding for doors and drawer fronts shall be 3 mm PVC banding. Exposed edges on cabinet bodies, shelves and dividers shall be covered with hot melt applied 3 mm PVC banding for full overlay construction. Colors shall be chosen from Canplast manufacturer's standard colors to match laminates.

Semi-exposed Materials:

Interior cabinet surfaces shall be factory laminated with melamine laminate cabinet liner on all semi-exposed surfaces. Liner color selected by Architect from manufacturer's standard white color. One liner will be selected for the entire project.

Concealed Members:

Solid Lumber or Plywood: Solid wood to be soft wood, kiln-dried, select pine fir or mill option lumber and plywood shall be Baltic Birch 7-ply.

Industrial Grade Particle Board: All particle board used in the cabinets and countertops must be premium industrial grade "West Coast" board made from fine particles of western soft woods and conform to the Commercial Standards CS-236-66 Type I, Density B, Class 2 property requirements (CS 1B2), also known as ANSI A208.1 – 1979.

Density, lb. per cubic foot		47
Modulus of Rupture, lb. per sq. in.		2400
Modulus of Elasticity, lb. per sq. in.		450000
Internal Bond, lb. per sq. in.		90 PSI
Thickness Swell (24 hr immerse)		4%
Moisture Content % by weight		6.0
Screw Holding	Face	330
	Edge	250
Surface Strength lb. per sq. in.		275
Hardness lb.		900

Hardboard: ANSI A135.4, Class 1, tempered, smooth two-sides.

ASSEMBLY

General Construction Method:

Tops, bottoms and end panels have six, 8mm hardwood dowels at each joint securing them together with glue. Backs are full captured within a datto 5/8" wide and ¼" deep on both end panels and top and bottom. The ¾" void between the backside of the back and the wall shall have 5" nailers at the top and bottom of base and upper cabinets and an additional middle nailer on tall cabinets for securing to the wall.

In addition to dowels, thermosetting mechanical fasteners may be used to hold the various components securely together.

Top, Bottoms and End Panels:

Substrate shall be industrial grade particleboard ¾" thick and to match cabinet door face. All exposed edges shall be machine applied with an edge banding specified under the "Edge Banding" section.

Upper cabinets shall have the top side of the bottoms and the under side of the top finished to match the colored vinyl cabinet liner. The top and bottom edge of the end panels shall be machine applied with specified PVC edge banding.

Shelves and Partitions:

Substrate shall be industrial grade particleboard ¾" thick with colored vinyl laminate cabinet liner on all exposed surfaces. All edges shall have hot-glued PVC edging. All shelves fixed or adjustable shall be 1" thick and all fixed vertical dividers ¾" thick.

Front edge of interior, exposed shelves and dividers shall have 1mm PVC edge banding, machine applied.

Front edge of interior, semi-exposed shelves and dividers shall have 1mm PVC edge banding, machine applied.

All adjustable shelves shall be supported on pin type clips adjustable on 1¼" center in 5mm holes.

All center shelves in cabinets over 66" in height shall be fixed for cabinet rigidity.

Backs:

Substrate shall be 3/8" thick industrial grade particleboard with colored laminate cabinet liner on all semi-exposed surfaces.

Exposed finished backs shall be edged panels ¾" thick like "fronts" below. Backs may be continuous over several units or individual as per drawings.

Door and Drawer Fronts and Finished Ends:

Substrate shall be ¾" thick industrial grade particleboard with colored cabinet laminate cabinet liner on back face. Standard colors of high-pressure plastic laminate shall be selected for bonding to the exposed face. All exposed edges shall be machine applied with an edge banding specified under the "Edge Banding" section.

Bases:

Substrate shall be ¾" thick industrial grade particleboard or dimension lumber running the width of the cabinet at the front and back. There shall be two runners minimum of 1" thick running front to back at the ends for support and one additional runner centered in all cabinets greater than 24" wide.

Drawers:

Material shall be ½" thick industrial grade particleboard with colored laminate. Subfront same but 5/8" thick. Drawer sides shall be doweled to front and back. Drawer bottom shall be ¼" minimum thick with colored laminate. Drawer bottom shall be housed into front, sides and back.

All parts glued and mechanically fastened using thermosetting fasteners or secured with hardwood dowels and glue.

Filler and Scribes:

All cabinets, where wall-to-wall conditions occur, shall have filler (scribes) to allow for variance in field conditions. These fillers shall be the color of the front of the cabinets.

In general, fillers shall not be used for cabinets that abut walls on only one side.
Fillers shall be sent to the field in lengths cut to size but in widths greater than necessary to allow for installers to custom fit the walls.

Counter Tops:

Countertops shall consist of two layers of ¾" high pressure particleboard at all edges back 4" minimum with 4" wide supports every 24" for a total thickness of 1-1/2". Countertops surfaces shall behorizontal grade high pressure plastic laminate applied to substrate as recommended by the decorative laminate association. Color shall be selected by owner to be red in color. All exposed edges shall receive PVC T-banding thickness of .2" and height of 1-1/2" to match to color of plastic laminate countertop.

Countertops against a wall shall have ¾"x4" high pressure particleboard loose installed back splash for back and side walls as required. Provide ¼" of scribe on back to allow for normal field variances installations.

Colors Selections:

All color selection by owner.

All interior melamine shall be white.

CASEWORK HARDWARE AND ACCESSORIES

Provide manufacturer's standard, stain finish hardware units, unless otherwise indicated.

Hinges: Concealed hinges of heavy gauge metal construction, 200,000 open/close cycle test, with hinge manufacturer's lifetime material replacement guarantee. 170 degree swing. Fully adjustable for clockwise, counter-clockwise, toe in and out door alignment. Provide base plates to maintain 1/8 inch reveals between door/drawers within the same cabinet, and between doors of adjoining cabinets. Doors to be self-closing, and fitted with silencer bumpers.

Pulls:

Institutional projecting type, drilled 4" on center, finish to be selected. Mount door pulls vertically on door fronts, horizontally on drawer fronts. Provide recessed pulls at sliding doors.

Magnetic Catches: Adjustable magnetic catches shall have minimum of 8 pound pull; one catch for doors up to 48" in height and from 48" to 96" there shall be two catches per door.

Drawer Slides: Standard drawers unless otherwise noted: side and bottom mounted slides with positive stop and lockout position, heavy-duty cold rolled steel epoxy coated color, full nylon/ball bearing operation, with one side captured for minimizing side play. Load rating static position to be no less than 100 lbs. Blum #BS 230M or approved equal.

Shelf Supports: Adjustable shelf support shall be clear injection molded polycarbonate or steel plated, pin-type, with an integral bearing plate which has a cast-in wedge to help retain the shelf when loaded. Pin fits into 5mm holes (Eurosystem).

Restraining Device: Provide device on lab upper cabinet doors to prevent door from hitting adjacent door.

Cord Grommets: #A2350 as manufactured by TMI Systems Design Corporation or approved equal.

Drawer and Cabinet Door Locks: Locks to be disc tumbler cam type. (National Lock No. M4-7054) All keyed alike.

FABRICATION

Fabricate casework furniture to dimensions, profiles and details shown.

Assemble units in the shop in as large components as practicable to minimize field jointing.

Install hardware uniformly and precisely. Set hinge snug and flat. Turn screws to flat seat. Adjust and align hardware so that moving parts operate freely and contact points meet accurately. Allow for final field adjustment after installation. Adjust doors and drawers to not hit adjacent doors and drawers.

COUNTERTOP AND ACCESSORIES

Counter Tops:

Deck shall consist of 1 layer of 1" high density particleboard base with ½" solid surface material continuous top & front edge built up layers solid surface to total of 1-1/2" with ½" radius top & bottom, creating a total thickness of 1-1/2" countertop to be installed. At exposed ends of countertops provide ¼" overhang and a radius of ¼" at top and bottom.

Countertop shall have a ½" x 4" high back splash with ¼" radius at top, loose installed after countertop.

Colors Selections:

All color selection by owner.

All interior melamine shall be white.

Top Sizes: Furnish tops in maximum practicable lengths.

PART 3 - EXECUTION

CASEWORK INSTALLATION

Verify dimensions of all cabinet locations, plumbing and other mechanical rough-ins, etc. before fabrication. Fabricate cabinets and countertops for scribe fit.

Installation shall be performed by trained personnel experienced in the installation of this type of equipment.

Install plumb, level, true and straight with no distortions. Shim as required, using concealed shims.

Base cabinets: Set cabinets straight, plumb and level. Adjust sub-tops within 1/16" of a single plane. Fasten each individual cabinet to floor at toe space, with fasteners spaced 24" o.c. Screw continuous cabinets together. Secure individual cabinets with not less than 2 fasteners into floor, where they do not joint other cabinet.
Provide minimum of two (2) fasteners on the upper portion of each cabinet back into wall (maximum spacing 24"o.c.)

Where required, assemble units into one integral unit with joints flush, tight and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16"

Wall Cabinets: Securely fasten to solid supporting material, not wallboard. Anchor, adjust and align wall cabinets as specified for base cabinets. Provide grommets at all screws thru back of cabinet for clean visual appearance of exposed screw heads.

Reinforcement of stud walls to support wall-mounted cabinets will be done during wall erection by trade involved, but responsibility for accurate location and sizing of reinforcement if part of this work.

Provide minimum of two (2) fasteners at top and two (2) at the bottom portion of each cabinet back into wall (maximum spacing at 24" o.c.)

Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

Leave cabinetry clean and free from installation residue. Remove all cartons, debris, sawdust, scraps, etc, and leave spaces clean and all casework ready for Owner's use.

INSTALLATION OF COUNTERTOPS

Field Jointing: Where practicable, make in same manner as factory jointing using dowels, splines, adhesives and fasteners recommended by manufacturer. Locate field joints as shown on accepted shop drawings, factory prepared so there is no job site processing of top and edge surfaces.

Fastenings: Use concealed clamping devices for field joints. Tighten in accordance with manufacturer's instruction to exert a constant, heavy clamping pressure at joints. Secure tops to cabinets with "Z" type fasteners or equivalent, using 2 or more fasteners at each front, end and back.

Workmanship: Abut top and edge surfaces in one true plan, with internal supports p laced to prevent any deflection. Provide flush hairline joints in top units using clamping devices. After installation, carefully dress joints smooth. Attach to door with screws.

Verify holes and cutouts as required for mechanical and electrical service fixtures.

Provide scribe molding for closures at junctures of top, and splash with walls as recommended by manufacturer for materials involved. Use chemical resistant, permanently elastic sealing compound at base to and top of splash.

INSTALLATION OF ACCESSORIES

Install in a precise manner in accordance with manufacturer's directions. Turn screw to a flat seat; do not drive. Adjust moving parts to operate freely without excessive bind.

CLEANING AND PROTECTION

Repair or remove and replace defective work as directed upon completion of installation.

Clean shop-finished surfaces, touch-up as required, and remove or refinish damaged or soiled areas, as acceptable to Architect.

Protection: Advise Contractor of procedures and precautions for protection of materials and installed cabinet and storage casework from damage by work of other trades.

END OF SECTION 12400