

Project Manual

SOUTH WHITLEY COMMUNITY PUBLIC LIBRARY ADDITION SOUTH WHITLEY, INDIANA

Owner:

South Whitley Community Public Library
South Whitley, IN

Architect:

SRKM Architecture, LLC
Warsaw, Indiana

July 12, 2019

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Notice to Bidders

South Whitley Community Public Library Building Addition 2019

Notice is hereby given, that the South Whitley Community Public Library, hereinafter referred to as the Owner, will receive sealed bid packets for the construction of a new auditorium addition to the existing building.

Sealed bids must be received by the Owner no later than 4:00 p.m. (Local Time) on Tuesday, August 6, 2019. Bids received after such hour will be returned unopened. Bids may be sent to or hand delivered to: South Whitley Community Public Library, 201 E. Front Street, South Whitley, IN 46787.

A pre-bid meeting will be held at 3:00 p.m. (local time) on Friday, July 19, 2019 at the South Whitley Community Public Library, 201 E. Front Street, South Whitley, IN 46787. All prime contractors, subcontractors, small, minority or women owned enterprises and other interested parties are invited to attend.

The Project will entail the following work items:

The construction of a single story wood and brick addition to the existing library building of approximately 3,900 square feet and including normal excavation, concrete, steel and wood framing, doors, windows, finishes and plumbing, mechanical, electrical work.

Plans and Specification for the Project are on file and may be examined at the following locations:

- *SRKM Architecture, 120 S. Buffalo Street, Warsaw, IN 46580 (574-269-1596)*
- *Triangle Digital Printing, 205 E. Jefferson Blvd, Mishawaka, IN 46545 (574-259-2459)*

Copies of the Plans and Contract Documents and Specifications for each division of work may be obtained at Triangle Digital Printing 205 E. Jefferson Blvd, Mishawaka, IN 46545.

Gross Retail and Use Tax (generally called sales tax) shall not be included in the bid. Sales Tax is exempt for this project.

The work to be performed and the bid to be submitted shall include sufficient and proper sums for all general construction, mechanical installation, labor, materials, permits, licenses, insurance, and so forth incidental to and required for the construction of the addition.

Each bid must be enclosed in a sealed envelope bearing the title of the Project and the name and address of Bidder. All bids must be submitted on the bid forms as identified in the Contract Documents and Specifications.

Each bid shall be accompanied by a certified check or acceptable bidder's bond made payable to the Owner, in a sum of not less than five percent (5%) of the total amount of the highest aggregate bid, which check or bond will be held by the Owner as evidence that the bidder will, if awarded the contract, enter into the same with the Owner upon notification from him to do so within ten (10) days of said notification.

Approved performance and payment bonds guaranteeing faithful and proper performance of the work and materials, to be executed by an acceptable surety company, will be required of the Contractor at the time of contract execution. The bonds will be in the amount of 100% of the

Contract Price and must be in full force and effect throughout the term of the Construction Contract plus a period of twelve (12) months from the date of substantial completion.

The Owner reserves the right to reject any bid, or all bids, or to accept any bid or bids, or to make such combination of bids as may seem desirable, and to waive any and all informalities in bidding. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bid may be withdrawn after the scheduled closing time for receipt of bids for at least ninety (90) days.

A conditional or qualified Bid will not be accepted.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the project throughout.

Bids shall be properly and completely executed on bid forms included in the Specifications. Bids shall include all information requested by Indiana Form 96 (Revised 1987) included with the Specifications. Under Section III of Form 96, the Bidder shall submit a financial statement. A copy of the proposed Financial Statement to be submitted with the bid is included in the bid documents section to these specifications. The Owner may make such investigations as deemed necessary to determine the ability of the Bidder to perform the work and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein.

Each Bidder is responsible for inspecting the Project site(s) and for reading and being thoroughly familiar with the Contract Documents and Specifications. The failure or omission of any Bidder to do any of the foregoing shall in no way relieve any Bidder from any obligation with respect to its Bid.

For more information please contact SRKM Architecture, Jeff Kumfer, Project Manager, at jeff@srkmarch.com or 574-269-1596.

**SECTION 00004
INSTRUCTIONS TO BIDDERS**

SCOPE

AIA Document A701 - Instructions to Bidders, are hereby incorporated into this contract by reference.

Copies may be obtained by contacting the Architect.

END OF SECTION

**SECTION 00020
BID FORM**

TO: South Whitley Community Public Library Addition
201 E. Front St.
South Whitley, Indiana 46787

1. The undersigned, having familiarized _____ with the local conditions affecting the cost of the Work and with the Contract Documents, including Notice to Bidders, Instructions to Bidders, General Conditions, The Form of Proposal, the Form of Contract, etc. Plans, Drawings, and Specifications for the South Whitley Community Public Library Addition Project located in South Whitley, Indiana all in accordance with the plans and specifications as prepared by SRKM Architecture, LLC, including Addenda Nos. _____, _____, _____, and _____ issued thereto, hereby propose to perform everything required to be performed and to provide and furnish all of the labor, materials, necessary tools, expendable equipment, and all transportation services necessary to complete the project in a workmanlike manner, for the sum of:

BASE BID: _____
 _____ (\$ _____)

2. The undersigned agrees to complete the work in _____ consecutive calendar days after receipt of notice from Owner to commence work.
3. It is understood and agreed by the undersigned that the South Whitley Community Public Library Addition project is tax exempt. There shall be no sales tax charges included in the Bid prices.
4. In submitting this Proposal, it is understood that the right is reserved by the Owner to reject any and all bids. It is agreed that this bid may not be withdrawn for a period of ninety (90) days from the opening thereof.
5. Accompanying this Proposal is a Bid Bond in the amount of not less than 5% of the base bid, or as follows:

_____ (\$ _____)

payable to South Whitley Community Public Library, which it is agreed shall be retained as liquidated damages if the undersigned fails to execute the Contract in conformity with the Form of Contract incorporated in the Contract Documents and furnish bond as specified within ten (10) days after notification of the award of the Contract to the undersigned.

6. The undersigned has completed and submitted with this Bid Form in addition to the Bid

Bond:

1. Alternate Bid Sheet
2. Contractor's Non-Collusion Affidavit

IN TESTIMONY WHEREOF, The Bidder (An Individual) has hereunto set his hand this _____ day of _____, 2019.

INDIVIDUAL

IN TESTIMONY WHEREOF, The Bidder (A Partnership) has caused this Proposal to be signed by each Partnership, this _____ day of _____, 2019.

PARTNER

PARTNER

PARTNER

IN TESTIMONY WHEREOF, the Bidder (A Corporation) has caused this Proposal to be signed by its President and Secretary and affixed its Corporate Seal this _____ day of _____, 2019.

CORPORATION

PRESIDENT

Corporate Seal

SECRETARY

ALTERNATE BIDS

ALTERNATE#1 – Addition of exit stair from basement: ADD/DEDUCT _____
_____ (\$ _____)

ALTERNATE#2 - Addition of courtyard brick wall: ADD/DEDUCT _____
_____ (\$ _____)

ALTERNATE #3 – Change of roof style: ADD/DEDUCT _____
_____ (\$ _____)

ALTERNATE#4: - Change Auditorium floor covering from carpet to LVT1: ADD/DEDUCT _
_____ (\$ _____)

ALTERNATE#5: ADD/DEDUCT _____
_____ (\$ _____)

CONTRACTOR'S

NON-COLLUSION AFFIDAVIT

The Bidder, by its officers and _____ agents or representatives present at the time of filing this bid, being duly sworn, on their oaths, say that neither they nor any of the, have in any way, directly or indirectly, entered into any arrangement or agreement with any other bidder, or with any public officer of the State of Indiana whereby such affiant or affiants or either of them, has paid or is to pay to such other bidder or public officer any sum of money, or have given or is to give such other bidder or public officer anything of value whatever, or such affiant or affiants or either of them has not, directly or indirectly, entered into any arrangement or agreement with any other bidder or bidders, which tends to or does lessen or destroy free completion in the letting of the contract sought for by the attached bids; that no inducement of any form or character other than that which appears upon the face of the bid will be suggested, offered, paid or delivered to any person whomsoever to influence the acceptance of the said bid or awarding of the contract, nor has this bidder any agreement or understanding of any kind whatsoever, with any person whomsoever to pay, deliver to, or share with any other person, in any way or manner, any of the proceeds of the contract sought by this bid.

FIRM NAME

*OWNER-PRESIDENT-PARTNER

PARTNER-VICE PRESIDENT AND/OR SEC. TREAS.

PARTNER

Subscribed and sworn to before me by _____

this _____ day of _____, 2019.

My Commission Expires:

NOTARY PUBLIC

SEAL

*This form must be signed by the same person(s) who sign(s) the Bid Form.

END OF SECTION

**SECTION 00050
GENERAL CONDITIONS**

SCOPE

AIA Document A201 - General Conditions of the Contract for Construction, are hereby incorporated into this contract by reference.

Copies may be obtained by contacting the Architect.

END OF SECTION

SECTION 00060
SUPPLEMENTARY GENERAL CONDITIONS

CONTENTS

1.0	General Conditions	5.0	Indemnification
2.0	Definitions	6.0	Owner's Right to Carry Out the Work
3.0	Execution, Correlation, Intent and Interpretations	7.0	Insurance
4.0	Permits, Fees and Notices	8.0	Property Insurance

1.0 GENERAL CONDITIONS

- A. The following supplements modify, change, delete from or add to the General Conditions of the Contract for Construction, AIA Contract Document A201, Current Edition, where any Article of the General Conditions is modified or any Paragraph, Subparagraph, or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph, or Clause shall remain in effect.

2.0 DEFINITIONS

- A. The AIA General Conditions shall be supplemented as follows:
1. Architect referred to herein and in the Specifications shall be construed to mean:
 - a. SRKM Architecture
120 S. Buffalo St.
Warsaw, Indiana 46580
(574) 269-1596
 3. Specification's Format - Language:
 - a. The Specifications are written in streamline form. Listings of work, materials, procedure are given and statements and directions are to be inferred by use of single words, phrases or clauses frequently without the use of grammatical sentence structure. Abbreviations common to the construction industry are used freely on the drawings and in the Specifications.

- b. Should any bidder question the meaning of any item, he should clarify it with the Architect before submitting the bid. By submitting the bid, the Contractors accept the Architect's intent of meaning and interpretation of these documents.
- 4. As Directed, Acceptable, Approved, Rejected: And others of similar meaning which authorizes an exercise of judgment shall be understood to mean that such power to direct, accept, approve and reject shall be vested only in the Architect and/or Owner.
- 5. Specifications: The booklet entitled, Project Manual including all modifications thereof incorporated therein. The term Project Manual shall mean the volume which includes the Bidding Requirements, Conditions of the Contract and the Specifications as enumerated in the "Table of Contents". The Specifications include all written information made or to be made pertaining, but not limited to the method and manner of performing work and to the quality of materials to be furnished under the Contract. The drawings may also include Specifications as directed by the Architect.
- 6. Drawings: All approved drawings or reproductions of such drawings pertaining to the work provided for the Contract on file in the Architect's office. All drawings pertain to all Divisions of the Work, but subject to modifications in the detailed Specifications for any Division. See "Index of Drawings" located on the drawings.
- 7. Similar: Shall be taken in its general sense and not meaning identical and all details of such work shall be in proper relation to the location and connection of other parts of the work.
- 8. Provide: Shall mean furnish and install in place.

3.0 EXECUTION, CORRELATION, INTENT AND INTERPRETATIONS

- A. The AIA General Conditions shall be supplemented as follows:
 - 1. Words describing materials or work which have a well-known technical or trade meaning, unless otherwise specifically defined in the Contract Documents, shall be construed in accordance with such well-known meaning. In case of disputes, Architect's interpretation of terms shall be final.

2. Ambiguity or conflict in description of quality or quantity shall be resolved in favor of the better quality or greater quantity.
3. In case work or materials are specified and/or shown on drawings or be done or provided by more than one Prime Contractor, each Contractor will be deemed to have figured the item and the Architect will determine who shall furnish work and who shall submit credit to Owner for work.
4. Each Contractor must provide all work and materials which any section or part of the plan, drawings, specifications or conditions require him to provide regardless of whether such requirement is faithfully repeated in other parts or sections thereof to which the provision might be appropriate.
5. Work called for under this Document is shown on drawings, which are part of Contract Documents. See Index to Drawings on Index or Cover Sheet for enumeration of drawings. See Table of Contents for enumeration of Documents and Sections.
6. The figured dimensions on the drawings or notes including dimensions shall be used for construction instead of measurements of the drawings by scale. No scale measurements shall be used as a dimension for construction. Dimensions on all drawings, as well as the detail drawings themselves, are subject in every case to measurements of adjacent, existing or previously completed work. All such measurements necessary shall be taken before undertaking any work dependent upon such data. Field verification of dimensions on plans is directed since actual location, distances and levels will be governed by actual field conditions.
7. Items which are not dimensioned shall be located where shown in relation to elements which have been already installed within the building and in all cases are subject to Architect's approval.
8. The order of precedence governing the Contract Documents shall be:
 - a. Existing conditions.
 - b. Alignment with elements already installed.
 - c. Figured dimensions in preference to scale.
 - d. Detail drawings in preference to small scale drawings.
 - e. Written information in preference to drawing lines.

- f. Specifications in preference to drafting type information given on the drawings (technical structural notes are the exception).
 - g. In all cases, the better quality and/or greater quantity shall have preference.
9. Each Contractor and Subcontractor shall obtain complete data at the site and inspect surfaces that are to receive his work before proceeding with fabricating, assembling, fitting or erecting his work. He shall be solely responsible for the accuracy of measurements and laying out of the work and shall make good any errors, defects due to faulty measurements taken, information obtained, layout, or failure to report discrepancies.
10. Starting of work by the Contractors or Subcontractors implies their acceptance of the work of others. Removal and replacements of work applied to defective surfaces in order to correct defects shall be done at the expense of the Contractors who applied work to defective surfaces.
11. The data set forth in these Specifications and indicated on the drawings are as accurate as can be obtained but their extreme accuracy is not guaranteed. Final application thereto shall be determined on the job as conditions may demand and subject to the approval of the Architect.
12. After a Contract award any verbals or written instructions or information from or made by representatives of the Owner or Architect for an interpretation and/or correction shall not be construed as in any way amending the Contract, Contract Documents or Contract Amounts.

4.0 PERMITS, FEES AND NOTICES

- A. The AIA General Conditions shall be supplemented as follows:
- 1. Each Contractor shall obtain and pay for all construction permits, licenses, financial guarantees, bonds, certificates, inspections, notices and other fees, both permanent and temporary, unless otherwise noted.
 - 2. The Owner will obtain the State of Indiana Building approval.
 - 3. The Contractor shall also post and pay for any bonds fees required by any public or governmental authority.

4. The Owner will pay for local utility connection (tap) fees for gas, electric, sewer, and water. These fees are only those attributable to the permanent project connections. Contractor shall pay any connection fee for temporary utilities.
5. Certificates of Inspection shall be delivered to Architect promptly upon receipt. Owner shall receive copy of all Permits and Certificates of Inspection for his records.

B. The AIA General Conditions shall be supplemented as follows:

1. Contractors who perform any work under this Contract will fully comply to the provisions of the Federal Occupational Safety and Health Act of 1970 and to any rules and regulations pursuant to the Act.

5.0 INDEMNIFICATION

A. The AIA General Conditions is supplemented as follows:

1. Add a new subparagraph as follows:
 - a. "None of the foregoing provisions shall deprive the Owner or the Architect of any action, right or remedy otherwise available to them or either of them at common law."

6.0 OWNER'S RIGHT TO CARRY OUT THE WORK

A. The General Conditions shall be and hereby is supplemented as follows:

1. The Owner's actions pursuant to this subparagraph shall not operate as a release of any obligations of a Surety upon its Performance and Labor and Material Payment Bonds.

7.0 INSURANCE

A. The AIA General Conditions, Article 10, shall be supplemented as follows:

1. During the term of the Contract, the Contractor and each Subcontractor shall at their own expense purchase and maintain the following insurance in companies properly licensed and satisfactory to the Owner.

Commercial General Liability: \$1,000,000 per Occurrence
 \$2,000,000 General Aggregate (per project)

Business Auto Liability:	\$1,000,000 Combined Single Limit (Each Accident) (Including Owned, Leased, Hired and Non-Owned)
Worker's Compensation:	Statutory Limits Employer's Liability \$500,000/\$500,000/\$500,000 (Or Valid Affidavit of Exemption)
Umbrella	\$2,000,000 per Occurrence \$2,000,000 Aggregate (Follow Form)

Commercial General Liability coverage shall be written on ISO occurrence form CG00 01 10/01 or an equivalent, providing coverage for liability arising from premises, operations, blanket contractual of a type that provides coverage for the indemnification clause in this subcontract, independent contractors, products-completed operations, and personal and advertising injury. Indicate that no exclusion applies for XCU coverages.

The Owner and all other parties required of the Contractor, shall be included as additional insureds on the contractors CGL and Auto policies using an additional insured endorsement that provides primary coverage AND completed operations coverage. (CGL Form CG2010 (11/85) or equivalent including blanket forms which meet the same requirements) The contractor shall be required to maintain CGL coverage for itself and all additional insureds for the duration of the project and maintain completed operations coverage for itself and each additional insured for at least 3 years after completion of the work or the length of the State of Indiana statute of repose, whichever is greater. Contractor shall provide a copy of their additional insured endorsement upon request.

The contract requires the contractor to provide builder's risk insurance in not less than 100% the amount of the contract.

To the fullest extent permitted by law, the contractor shall provide a waiver of subrogation on the CGL, Auto, and Workers' compensation policies.

Insurance Company Financial Strength: The use of an "A" rated carrier and a carrier that is licensed to conduct business in the state in which the work will be performed is required.

Law to Apply: The laws of the State of Indiana will apply to this contract.

Thirty (30) days written notice is required if the contractor's policy is cancelled. "When providing Certificate of Liability Insurance ACORD 25 (2009/09), subcontractor agrees to notify contractor of any notice of cancellation they receive from their insurer(s) within 2 days of receipt."

The contractor and every subcontractor shall submit a certificate of insurance that meets the insurance requirements.

8.0 PROPERTY INSURANCE

A. The AIA General Conditions, Article 10 shall be supplemented as follows:

1. Owner's Insurance:

- a. The owner will assume insurance coverage responsibilities upon substantial completion

9.0 SAFETY

A. The AIA General Conditions, Article 10, shall be supplemented as follows:

Contractor agrees that it is responsible for ensuring the safety of its employees, its subcontractor's employees and others on the jobsite arising out of any aspect of the Contractor's performance of the work under this Agreement. Contractor has the duty to provide a safe place for the performance of the Contractor's work under this Agreement, including but not limited to, provision of general and safety supervision of the performance of Contractor's work, ensuring that the safe use and condition of all equipment used in connection with the performance of Contractor's work, implementation of procedures intended to ensure the safe performance of Contractor's work, implementation of safety precautions regarding the use of or exposure to any hazardous materials in the performance of Contractor's work, and compliance with any and all Federal, state, and/or local laws, ordinances or regulations regarding job site safety including all OSHA requirements.

Contractor acknowledges that it is the sole party responsible for the safe performance of the Contractor's work, *even if Contractor or Owner have implemented any safety program or regulations at the project or jobsite.*

8.0 PROPERTY INSURANCE

A. The AIA General Conditions shall be supplemented as follows:

1. Owner's Insurance:

- b. The owner will assume insurance coverage responsibilities upon substantial completion.

b. Contractor at his option may include other insurance items as theft, collapse, special hazards and the like.

2. Insurance shall include the interests of the Owner, the Contractor, Subcontractors and the Sub-subcontractors in the work and shall insure against the perils of Fire, Extended Coverage, Vandalism and Malicious Mischief.

END OF SECTION

SECTION 01010
SUMMARY OF THE WORK

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.

PROJECT/WORK IDENTIFICATION:

General: Project name is South Whitley Community Public Library Addition, South Whitley, Indiana as shown on Contract Documents prepared by SRKM Architecture, LLC.

Contract Documents: Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:

Existing site conditions.

Work performed prior to work under this Contract.

Work to be performed concurrently by the Owner and others.

Summary by References: Work of the Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specification Sections, Drawings, addenda and modifications to the contract documents issued subsequent to the initial printing of this project manual and including but not necessarily limited to printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the contract documents.

Additionally, the work includes compliance with federal provisions, including:

1. Bonding Requirements
2. Retainage
3. Conflict of Interest (24 CFR part 570)
4. Code of Conduct (24 CFR part 84)
5. Record of Retention (24 CFR part 85)
6. Access to Records (24 CFR part 85)
7. Title VI Civil Rights Act of 1964
8. Title VII Civil Rights Act of 1972
9. Age Discrimination Act of 1975

10. Section 504 Rehabilitation Act of 1973
11. Section 503 Rehabilitation Act of 1973
12. Executive Order 11246
13. Americans with Disabilities Act of 1968
14. Architectural Barriers Act of 1968
15. Davis-Bacon Act
16. Contract Work Hours and Safety Standards Act
17. Copeland Act
18. Fair Labor Standards Act
19. Clean Air Act
20. Federal Water Pollution Control Act
21. US Department of Housing and Urban Development

-REFER TO FEDERAL CONSTRUCTION CONTRACT PROVISION-

Abbreviated Written Summary: Briefly and without force and effect upon the contract documents, the work of the Contract can be summarized as follows:

Construction of a single story addition to the existing library building including, civil/site work, concrete work, structural steel framing, carpentry, insulation, roofing, doors and windows, finishing, plumbing, HVAC, electrical, and low voltage systems, as well as associated mobilization, demobilization, coordination, and clean up.

PERMITS AND FEES:

All local (city) building permits, utility fees, and/or financial guarantees, and all local utility fees, whether associated with temporary or permanent utilities, are the responsibility of the contractor.

CONTRACTOR USE OF PREMISES:

General: During the entire construction period, the Contractor shall have the use of the premises for construction operations. Coordinate off site operations with the owner and Town of South Whitley.

END OF SECTION

SECTION 01030 ALTERNATES

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF REQUIREMENTS:

Definition: An alternate is an amount proposed by Bidders and stated on the Bid Form that will be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either scope of work or in products, materials, equipment, systems or installation methods described in Contract Documents.

Coordination: Coordinate related work and modify or adjust adjacent work as required to ensure that work affected by each accepted alternate is complete and fully integrated into the project.

Notification: Immediately following award of Contract, prepare and distribute to each involved, notification of the status of each alternate. Indicate whether alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to alternates, if any.

Include as part of each alternate, miscellaneous devices, appurtenances and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.

ALTERNATE #1 – ADD EXIT STAIR FROM BASEMENT

The work of this alternate is the addition of foundation, walls, roof and prefabricated stairs, doors and windows to enclose a stair from the basement addition to grade level. The work shall include sidewalk to the street. The work shall also include all plumbing, mechanical, and electrical provisions associated with this addition and indicated on the drawings. The work will include some modifications to the Base Bid plans as indicated on the drawings.

ALTERNATE #2 – ADD COURTYARD MASONRY WALL

The work of this alternate includes the construction of a low masonry wall on the west side of the addition to enclose a courtyard with concrete patio. The work shall include new concrete foundation, brick wall and limestone cap as indicated on the drawings. The drawings also illustrate that the proposed on-grade location of condensing units would change to a roof-mounted location of said condensing units.

ALTERNATE #3 – CHANGE ROOF STYLE OVER AUDITORIUM

In an effort to coordinate the addition with the current library building, Alternate 3 provides the option to change to flat roof structure to a double sloped roof structure that reflects the look of the original library building. The drawings illustrate the style of roof trusses necessary to accomplish this change, and the flashing requirements would change accordingly.

ALTERNATE #4 – CHANGE AUDITORIUM FLOOR COVERING

The base bid floor covering for the auditorium is carpet as indicated on the drawings. Alternate 4 provides for the option to change that floor covering to LVT as indicated on the drawings.

END OF SECTION

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 this Section.

SUMMARY:

This Section specifies administrative and procedural requirements for cutting and patching.

Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

Demolition of selected portions of the building for alterations is included in demolition section

Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

QUALITY ASSURANCE:

Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio without shoring and bracing.

Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

MATERIALS:

Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

INSPECTION:

Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

PREPARATION:

Temporary Support: Provide temporary support of Work to be cut.

Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

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

PERFORMANCE:

General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

Drilling and Cutting: Drill and cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

END OF SECTION

**SECTION 01505
TEMPORARY FACILITIES**

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: Specific administrative and procedural minimum actions are specified in this section, as extensions of provisions in General Conditions and other contract documents. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this section will be recognized as an indication by Architect that such temporary activity is not required for successful completion of the work and compliance with requirements of contract documents. Provisions of this section are applicable to, but not by way of limitation, utility services, construction facilities, security/protection provisions, and support facilities.

JOB CONDITIONS:

General: Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.

Conditions of Use: Install, operate, maintain and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property.

PARTS 2 and 3 - PRODUCTS AND EXECUTION:

TEMPORARY UTILITY SERVICES:

The types of services required include, but not by way of limitation, water, surface drainage, electrical power and telephones. Where possible and reasonable, connect to existing franchised utilities for required services; and comply with service companies' recommendations on materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.

TEMPORARY CONSTRUCTION FACILITIES:

The types of temporary construction facilities required include, but not by way of limitation, water

distribution, drainage, heat, ventilation, electrical power distribution, lighting, stairs and ladders. Provide facilities reasonably required to perform construction operations properly and adequately.

Heating: Use gas from piped distribution system where available. Where piped gas is not available, heat with self-contained LP gas or fuel oil heaters, bearing UL, FM or other approval labels appropriate for application. Vent fuel-burning heaters, and equip units with individual-space thermostatic controls.

Electrical Power: Provide weatherproof, grounded, power distribution system sufficient to accommodate construction operations requiring power, use of power tools, electrical heating, lighting, and start-up testing of permanent electric-powered equipment prior to its permanent connection to electrical system.

Lighting: Provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting.

Access Provisions: Provide ramps, stairs, ladders and similar temporary access elements as reasonably required to perform the work and facilitate its inspection during installation. Comply with reasonable requests of governing authorities performing inspections. When permanent stairs are available for access during construction, cover finished surfaces with sufficient protection to ensure freedom from damage and deterioration at time of substantial completion.

SECURITY/PROTECTION PROVISIONS:

The types of temporary security and protection provisions required include, but not by way of limitation, barricades, warning signs/lights, personnel security program (theft prevention), and similar provisions intended to minimize property losses, personal injuries and claims for damages at project site.

Fire Extinguishers: Provide types, sizes, numbers and locations as would be reasonably effective in extinguishing fires during early stages, by personnel at project site.

Building Enclosure and Lockup: At earliest possible date, secure buildings against unauthorized entrance at times when personnel are not working.

TEMPORARY SUPPORT FACILITIES:

The types of temporary support facilities required include, but not by way of limitation, field offices, storage sheds, sanitary facilities, drinking water, first aid facilities, telephones, project identification signs, waste disposal service, and similar miscellaneous general services, all as may be reasonably required for proficient performance of the work accommodation of personnel at the site including Owner's and Architect's personnel. Discontinue and remove temporary support facilities, and make incidental similar use of permanent work of the project, only when and in manner authorized by Architect/Engineer; and, if not otherwise indicated, immediately before time

of substantial completion. Locate temporary support facilities for convenience of users, and for minimum interference with construction activities.

Contractor's Field Office: Provide adequate office space for field office personnel, suitably finished, furnished, equipped and conditioned.

Sanitary Facilities: At Contractor's option, provide either piped (wet) toilet facilities or self-contained toilet units of type acceptable to governing authorities, adequate (at all stages of construction) for use of personnel at project site. Provide separate facilities for male and female personnel when both sexes are working (in any capacity) at project site.

Project Identification Sign: On Maple Street frontage, provide project identification sign of MDO plywood - 3/4" thickness, 8' x 8', mounted on treated wood posts, and professionally painted.

END OF SECTION

**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.

PREREQUISITES TO SUBSTANTIAL COMPLETION:

General: Prior to requesting Architect's inspection for certification of substantial completion, 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 work claimed as "substantially complete", or list incomplete items, value of incompleteness and reasons for being incomplete.

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

Submit record drawings, maintenance manuals, property survey, and similar final record information.

Inspection Procedures: Upon receipt of Contractor's request, Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, Architect 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.

END OF SECTION

DIVISION 2 - SITEWORK
SECTION 02110 - DEMOLITION

SCOPE:

Applicable requirements of General Conditions, Supplementary Conditions and Project Requirements apply to Work of this Section.

GENERAL:

Furnish all labor, materials and equipment and perform all operations in connection with removal work and the removal of debris from the site.

Removal work is to coincide with construction sequence indicated in Instructions to Bidders. Work listed below will be general in nature.

Removal work is included in the following general areas:

1. Existing concrete sidewalks shown to be removed.
2. Existing exterior wall where shown to be removed.
3. Existing utility connections where shown to be removed.

Site Information: Data on existing site conditions are not intended as representations or warranties of the continuity of such conditions. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn thereof by the Contractor. The data made available is for the convenience of the Contractor.

Examination of Site: Carefully examine buildings and site surrounding territories thoroughly and fully as to all difficulties that may be encountered in complete excavation of the work, including conditions, accessibility and storage space affecting this Section of the Work. Investigate means of approach to the site.

Notices, Permits, Laws, etc.:

1. Contractor shall serve the Owner, Utility Companies, and all other parties who may be interested or involved with all notices required by law before starting removal work, and shall perform or refrain from performing all acts necessary to protect the Owner from any action or liability whatsoever resulting from this operation.
2. Contractor shall take out and pay for all permits, inspections certificates, bonds and/or sureties required by Federal, State, or Local Governments having lawful jurisdiction, and shall maintain all such measures required by law or ordinance of general safety as may be necessary to protect persons or property from hard or

damage in the course of removal operations.

SALVAGE MATERIALS:

All existing materials requiring removal shall become the property of the Contractor as salvage and shall be removed from the site at no additional costs to the Owner.

END OF SECTION

SECTION 02200
EARTHWORK

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of earthwork is indicated on drawings.

Preparation of subgrade for building slabs, is included as part of this work.

Drainage fill for support of building slabs is included as part of this work.

Excavation for Mechanical/Electrical Work: Refer to Divisions 15 and 16 sections 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:

Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

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

SUBMITTALS:

Test Reports-Excavating: Submit following reports directly to Architect from the testing services, with copy to Contractor:

Field density test reports. (1 required)

Report of actual unconfined compressive strength. (1 required)

JOB CONDITIONS:

Existing Utilities: Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult 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.

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

PART 2 - PRODUCTS

SOIL MATERIALS:

Definitions:

Satisfactory soil materials are not defined as those complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW and SP.

Unsatisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH and PT.

Subbase Material: Naturally or artificially graded mixture of bank run natural or crushed gravel, crushed stone, crushed slag.

Drainage Fill: Washed, evenly graded mixture of natural or crushed sand.

Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter.

PART 3 - EXECUTION

EXCAVATION:

Excavation consists of removal and disposal of material encountered to subgrade elevations including excavation of pavements and other obstructions visible on ground surface; and other items indicated to be demolished and removed; together with earth and other materials encountered.

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

Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to 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 Architect who will make an inspection of conditions.

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

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

Stability of Excavations: Slope 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.

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.

Material Storage: Stockpile satisfactory excavated materials until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

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 form work, 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 other work.

Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F. (1 degree C.).

COMPACTION:

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

Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D2049, for soils which will not exhibit a well-defined moisture-density relationship (cohesion less soils).

Structures, Building Slabs: Compact top 12" of subgrade and each layer of backfill or fill material at 90% maximum density for cohesive material or 95% relative density for cohesion less material.

Lawn or Unpaved Areas: Compact top 6" of subgrade and each layer of backfill or fill material at 85% maximum density for cohesive soils and 90% relative density for cohesion less soils.

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, to prevent free water appearing on surface during or subsequent to compaction operations.

BACKFILL AND FILL:

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

In excavations, use satisfactory excavated or borrow material.

Under grassed areas, use satisfactory excavated or borrow material.

Under building slabs, use drainage fill material.

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

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

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 a density less than that specified under "Compaction" for particular area classification, break up ground surface, pulverize, moisture-condition to 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 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, piping or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping or conduit to approximately same elevation in each lift.

GRADING:

General: 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 indicated, or between such points and existing grades.

Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structure and to prevent ponding.

BUILDING SLAB 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.

FIELD QUALITY CONTROL:

If, in opinion of Architect, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense.

MAINTENANCE:

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

Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

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

DISPOSAL OF EXCESS AND WASTE MATERIALS:

Remove excess excavated material, trash, debris and waste materials and dispose of it off Owner's property.

END OF SECTION

SECTION 02513
ASPHALT CONCRETE PAVING

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of asphalt concrete paving work is shown on drawings.

Prepared aggregate subbase is specified in earthwork sections.

JOB CONDITIONS:

Weather Limitations: Apply prime coat when ambient temperature is above 50 degrees F. (10 degrees C.), and when temperature has not been below 35 degrees F. (1 degree C.) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

Construct asphalt concrete surface course when atmospheric temperature is above 40 degrees F. (4 degrees C.), and when base is dry. Base course may be placed when air temperature is above 30 degrees F. (-1 degree C.) and rising.

Grade Control: Establish and maintain required lines and elevations.

PART 2 - PRODUCTS

MATERIALS:

General: Use locally available materials and gradations which exhibit a satisfactory record of previous installations.

Base Course Aggregate: Sound, angular crushed stone, crushed gravel, or crushed slag, stone or slag screenings.

Surface Course Aggregate: Crushed stone, crushed gravel, crushed slag.

Lane Marking Paint: Chlorinated rubber-alkyd type, FS TT-P-115, Type III, white color.

ASPHALT-AGGREGATE MIXTURE:

Plant Mix Asphalt Base: The plant-mix asphalt base shall comply with the current Indiana State Highway Commission Standard Specifications. The following applicable sections shall cover plant-mix asphalt base installations:

Section 401, Plant Mix Pavements - General

Section 402, Hot Asphalt Concrete Pavement

Section 406, Cold Mixed Bituminous Pavement

Base shall be #9 mixture.

Plant Mix Asphalt Surface: The plant-mix asphalt surface shall comply with the current Indiana State Highway Standard Specifications. The following applicable sections shall cover plant-mix asphalt surface installations:

Section 401, Plant Mix Pavements - General

Section 402, Hot Asphalt Emulsion Pavement

Section 403, Hot Asphalt Concrete Pavement

Surface shall be #11 mixture.

PART 3 - EXECUTION**SURFACE PREPARATION:**

Remove loose material from compacted subbase surface immediately before applying prime coat.

Notify Contractor of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.

PLACING MIX:

General: Place asphalt concrete mixture on prepared surface, spread and strike off. Spread mixture at minimum temperature of 225 degrees F. (107 degrees C.). Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness.

Paver Placing: Place in strips not less than 10' wide, unless otherwise acceptable to Architect. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.

Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of asphalt concrete course.

ROLLING:

General: Begin rolling when mixture will bear roller weight without excessive displacement.

Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.

Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.

Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.

Patching: Remove and replace paving areas mixed with foreign materials and defective area. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.

Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

TRAFFIC AND LANE MARKINGS:

Cleaning: Sweep and clean surface to eliminate loose material and dust.

Striping: Use chlorinated-rubber base traffic lane-marking paint, factory-mixed, quick-drying, and non-bleeding.

Color: White

FIELD QUALITY CONTROL:

Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:

Base Course: 1/2", plus or minus.

Surface Course: 1/4", plus or minus.

Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness.

Base Course Surface: 1/4"

Wearing Course Surface: 3/16"

END OF SECTION

**SECTION 02712
FOUNDATION DRAINAGE SYSTEMS**

PART 1 - GENERAL

SECTION INCLUDES:

Building perimeter, retaining wall and under slab-on-fill weep drainage system.

Filter aggregate and bedding.

RELATED SECTIONS:

Section 02207 - Aggregate Materials.

Section 02222 - Excavating: Excavating for site sub-drainage system piping and surrounding filter aggregate.

Section 02223 - Backfilling: Backfilling, over filter aggregate, up to subgrade elevation.

Section 02667 - Site Water Lines.

REFERENCES:

ASTM D2729 - Poly (Vinyl chloride) (PVC) Sewer Pipe and Fittings.

SUBMITTALS FOR REVIEW:

Section 01300 - Submittals: Procedures for submittals.

Product Data: Provide data on pipe drainage products, pipe accessories.

SUBMITTALS AT PROJECT CLOSEOUT:

Section 01700-Contract Closeout.

Section 01730-Operation and Maintenance Data: Procedures for submittals.

Record location of pipe runs, connections, cleanouts and principal invert elevations.

PART 2 - PRODUCTS

PIPE MATERIALS:

Polyvinyl Chloride Pipe: ASTM D2729; plain end, 4 and 6 inch inside diameter; with ½"dia. perforations on 5 inch centers a minimum of two rows and required fittings.

Use perforated pipe at sub-drainage system; un-perforated through sleeved walls.

AGGREGATE AND BEDDING:

Filter Aggregate and Bedding Materials: Fill Type as specified in Section 02207.

ACCESSORIES:

Pipe Coupling: Solid plastic.

PART 3 - EXECUTION

EXAMINATION:

Verify that excavated base is ready to receive work and excavations, dimensions, and elevations are as indicated on layout Drawings.

PREPARATION:

Hand trim excavations to required elevations. Correct over excavation with aggregate.

Remove large stones or other hard matter which could damage drainage piping, or impede consistent backfilling or compaction.

INSTALLATION:

Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.

Place drainage pipe on 4 inches compacted aggregate.

Lay pipe to slope ingredients noted on Drawings.

Place pipe with perforations facing up. Mechanically join pipe ends.

Install pipe couplings.

Install aggregate at sides, over joint covers and top of pipe. Provide top cover compacted thickness of 6 inches.

Place aggregate in maximum 6 inch lifts, consolidating each lift.

Refer to Section 02223 for compaction requirements. Do not displace or damage pipe when compacting.

Place impervious fill over drainage pipe aggregate cover and compact.

Connect to sump pit with un-perforated pipe through installed sleeves.

FIELD QUALITY CONTROL:

Section 01400 - Quality Assurance: Field inspection and testing.

Request inspection prior to placing aggregate cover over pipe.

PROTECTION:

Protect finished installation under provisions of Section 01500.

Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION

SECTION 02900 LAWNS

PART 1 - GENERAL

DESCRIPTION OF WORK:

Unless specifically indicated otherwise, this section includes furnishing of all materials, equipment and labor necessary for the installation of lawns and grass shown on the Drawings and including the following items.

- Fine grading of topsoil
- Protection and maintenance
- Warranty and replacement

QUALITY ASSURANCE:

Notice of Sources: Within ten (10) days following award of Contract, the Architect shall be notified of the sources of the materials required, so if desired, they may be inspected and tested.

Topsoil Testing: The Contractor for this Work shall take samples of the topsoil, and have tests made (such as "Quick Test" to determine if lime should be used), using methods approved by the Association of Agricultural Chemists or the State Agricultural Experiment Station. Any preparation work necessary to bring the topsoil into proper condition to receive seeding, shall be made in accordance with said tests at no additional cost to the Owner. Copy of the said tests and recommendations are to be submitted to the Architect for approval prior to starting of Work under this Section.

Seeds: All packages of seed shall bear official State or Federal stamps and certificates indicated the type, quality and content of the seed packages. Deliver packages unopened. Do not open until observed by the Architect.

SUBMITTALS:

Included with the bid, the Contractor shall submit a unit price list including unit prices for each and every type of lawn work required on the Project. Unit prices shall include all material and labor for a completed installation.

JOB CONDITIONS:

The Contractor shall be notified in writing by the Architect when Work on this Project has progressed sufficiently to commence work of seeding. Thereafter, seeding operations shall be conducted under favorable weather conditions during the next season or seasons which are normal

for such work as determined by accepted practice in the locality of the Project. At the option and on the full responsibility of the Contractor, seeding operations may be conducted under unseasonable conditions without additional compensation.

WARRANTY AND REPLACEMENT:

Warranty: Lawns shall be warranted for the duration of one full growing season after seeding and/or sodding and shall be alive and in satisfactory growth at the end of the warranty period. The growing season is defined as beginning May 1st and ending October 1st.

Replacement: At the end of the warranty period, observation will be made by the Architect upon written notice requesting such inspection, submitted by the Contractor at least ten (10) days before the anticipated date. If the lawns do not show a healthy, uniform stand of grass, those areas shall be re-seeded or re-sodded as soon as conditions permit, but during the spring or fall seeding periods.

Any areas replaced during the warranty period shall be warranted one additional full year from the date of re-seeding.

Owner's Responsibility: If any area of lawn, during the warranty and replacement period, is found to be damaged or destroyed due to vandalism, malicious mischief, vehicle ruts and tracks, or acts of God such as flooding, storm debris, then the Owner shall have the responsibility of replacing those lawn areas without cost or responsibility to the Contractor under this Section.

PART 2 - MATERIALS

MATERIALS:

Lime: (If required as a result of tests made under preceding Part 1) Shall be ground limestone (Dolomite) containing not less than 85% of total carbonates; and shall be ground to such a fineness that 50% will pass through a 100 mesh sieve, and 90% will pass through a 20 mesh sieve. Coarser material will be acceptable, provided the specified rates of application are increased proportionately on the basis of quantities passing the 100 mesh sieve.

Fertilizer: Commercial fertilizer shall be used for initial preparation and shall conform to the applicable state fertilizer laws. Fertilizer shall be uniform in composition, dry, and free flowing, and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be acceptable.

Water: Water will be available at the project site. The Contractor shall furnish all necessary hose, equipment, attachments, and accessories for the adequate irrigation of planted areas as may be required to complete the Work as specified.

Grass Seed: Shall be mixed and warranted by the dealer in accordance with the following:

<u>Common Name</u>	<u>Proportion by Weight</u>
Manhattan Perennial Rye Grass	45%
Wabash Kentucky Blue Grass	35%
Penn Lawn Red Fescue	20%

Grass seed shall be 95% pure and free of weeds and other harmful plants. It shall have a sufficient percentage of germination to provide a good stand of lawn within the requirements of these Specifications, approximately 85% to 87% minimum.

The Contractor may submit to the Architect for approval, specifications for the substitute mixture, which will provide a good stand of grass of similar character to the specified, if in his opinion it is desirable or necessary. Nothing in this Section shall be construed as relieving this Contractor of the requirement of the Section "Maintenance".

Hydro mulch: Weyerhaeuser "Silva-Fiber" or equal. Available through American Excelsior Corporation, Chicago, Illinois.

PART 3 - EXECUTION

SOIL PREPARATION FOR SEEDING:

Seeding Contractor to examine rough grade for proper elevation and notify the Architect of any areas detrimental to successful development of a lawn. Do not proceed with Work until unsatisfactory conditions have been corrected and acceptable.

Two (2) pounds of 12-12-12 formula commercial fertilizer per cubic yard shall be thoroughly mixed with the topsoil, or not less than 10# per 1000 square foot of lawn surface, whichever is the greater.

Applying Lime: Lime shall be applied at the rate of 50# to 100 square feet to the lawn areas being prepared for planting, if tests of soil reveal lime is needed.

PLANTING OF LAWNS:

Sowing of Seed: Immediately before any seed is to be sown, the ground shall be scarified as necessary and shall be raked until the surface is smooth, friable, and of uniformly fine texture. Lawn areas shall be seeded evenly with a mechanical spreader at the rate of 4# to 1000 square feet of area, lightly raked, rolled with a 200# roller and watered with a fine spray. The method of seeding may be varied at the discretion of the Contractor, on his own responsibility to establish a

smooth, uniform turf composed of the grasses specified. Re-seeding shall be done in accordance with this procedure.

Hydromulching: All seeded areas shall be hydro mulched with Weyerhaeuser "Silva-Fiber" at the rate of 2000 pounds per acre. Use "Bowie" hydro mulcher or equal to apply mulch.

CLEAN UP:

Any soil, manure, peat, or similar material which has been brought onto paved areas by hauling operations or otherwise shall be removed promptly, keeping these areas clean at all times. Upon completion of the planting, all excess stones and debris, which has not been previously cleaned up, shall be removed from the site or disposed of as required by the Architect, except topsoil shall be spread or piled on the site as directed by the Architect. All lawns and planting areas shall be prepared for final approval.

MAINTENANCE OF LAWN:

Maintenance shall begin immediately following the last operation of installation for each portion of lawn and shall continue in accordance with the following requirements.

Seeded Lawns: Seeded lawns shall be protected and maintained by watering, mowing and replacing for sixty days, or as long as may be necessary to provide a uniform stand of grass. For the purpose of establishing an acceptable standard, scattered bare spots, none of which is larger than one square foot, will be allowed up to a maximum of three (3) percent of any lawn area. Areas not meeting this requirement will be re-seeded.

Surface Application of Fertilizer: This Contractor shall spread a second application of Commercial (24-4-4) lawn fertilizer at the end of the maintenance period for both seeded and sodded lawns. Spreading rate shall be as recommended by the manufacturer.

New Planting: New lawn planting shall be protected and maintained until the end of the lawn maintenance period. Maintenance shall include watering, weeding, cultivating, mulching, re-seeding and other necessary operations. The Contractor is responsible for supplying all labor and equipment to meet the initial maintenance requirements, i.e. 60 days for seeded areas and 30 days for sodded areas. Following written acceptance of these areas, the Owner will assume maintenance as explained in Section 3.05, of this specification.

LABOR, EQUIPMENT AND SUPERVISION FOR MAINTENANCE:

Contractor for the Work under this Section shall supply all necessary supervision to meet the requirements set forth in this Section. It is understood that the Owner will furnish the necessary labor and watering and mowing equipment in accordance with this Contractor's instructions to meet the requirements herein established. The Contractor for the Work of this Section, however, will be required to do all fertilizing and application called for above.

The Owner is to supply the necessary hoses and other equipment required for watering. The Contractor for the Work under this Section will be responsible for instructing the personnel assigned, and supervising their work, until he is satisfied that they fully understand the requirements. He shall also make frequent inspections to determine whether instructions and maintenance work have been properly carried out, and report to the Architect any circumstances which he feels are detrimental to the growth and protection required during the maintenance period.

Nothing in this Section shall relieve the Contractor of the Work under this Section from the guarantee provisions herein set forth, unless he has given proper notice to the Architect, as called for, and then only if it can be clearly shown that negligence and improper following of instructions have been the cause of such failures as are covered under the guarantee.

OBSERVATION FOR ACCEPTANCE:

Observation: Observation of the Work of lawns to determine completion of contract work will be made by the Architect at the conclusion of the maintenance period, upon written notice requesting such observation submitted by the Contractor at least ten (10) days prior to the anticipated date. The condition of lawns will be noted and determination made by the Architect whether maintenance shall continue in any part.

END OF SECTION

**SECTION 03300
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

SECTION INCLUDES:

Cast-In-Place Concrete slabs and foundations.

Control, expansion and contraction joint devices associated with concrete work, including joint sealants.

PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION:

Section 03100-Concrete Form work: Placement of joint device anchors in form work.

REFERENCES:

ACI 301 - Structural Concrete for Buildings.

ACI 302 - Guide for Concrete Floor and Slab Construction.

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

ACI 305R - Hot Weather Concreting.

ACI 306R - Cold Weather Concreting.

ACI 308 - Standard Practice for Curing Concrete.

ACI 318 - Building Code Requirements for Reinforced Concrete.

ASTM C33 - Concrete Aggregates.

ASTM C94 - Ready-Mixed Concrete.

ASTM C 1 50 - Portland Cement.

ASTM C260 - Air Entraining Admixtures for Concrete.

ASTM C330 - Light Weight Aggregates For Structural Concrete.

ASTM C494 - Chemicals Admixtures for Concrete.

ASTM C618 - Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.

SUBMITTALS:

Submit under provisions of Section 01300.

Product Data: Provide data on joint devices, attachment accessories and admixtures.

Concrete Mix Designs: Submit copies of laboratory test or evaluation reports for proposed concrete materials and mix designs, for each required concrete mix, at least 15 days prior to any concrete placement.

Do not begin concrete production until mix designs have been reviewed by the Testing Service Firm and are acceptable to the Architect. Alternate mix designs may be used if approved in writing by the Architect.

Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent Work.

QUALITY ASSURANCE:

Perform Work in accordance with ACI 301.

Acquire cement and aggregate from same source for all work.

Conform to ACI 305R when concreting during hot weather.

Conform to ACI 306R when concreting during cold weather.

COORDINATION:

Coordinate work under provisions of Section 01039.

Coordinate the placement of joint devices with erection of concrete form work and placement of form accessories.

PART 2 - PRODUCTS

CONCRETE MATERIALS:

Cement: ASTM C150, Type I-Normal Type IA-Air Entraining.

Fine and Coarse Aggregates: ASTM C33.

Light weight Aggregate: ASTM C3'0.

Water: Clean and not detrimental to concrete.

ADMIXTURES:

Air Entrainment: ASTM C260.

Chemical: ASTM C494 Type A - Water Reducing, Type B - Retarding, Type C - Accelerating
Type D - Water Reducing and Retarding, Type E - Water Reducing, and Accelerating, Type F -
Water Reducing, Hi-h Range, Type G - Water Reducing, High Range and Retarding

Fly Ash Calcinated Pozzolan: ASTM C618.

No calcium chloride shall be used.

ACCESSORIES:

Bonding Agent: Polyvinyl Acetate.

Vapor Barrier: 8 mil thick clear polyethylene film fabric reinforced plastic.

Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.

JOINT DEVICES AND FILLER MATERIALS:

Joint Filler@ Asphalt impregnated fiberboard or felt, ½ inch thick;

Sealant and Primer: Type 5 for horizontal joints and Type I for vertical joints.

CONCRETE MIX:

Mix and deliver concrete in accordance with ASTM C94.

Provide concrete to the following criteria:

Compressive Strength (28 day) 4000 psi

Water/Cement Ratio (maximum) .44 (non-air-entrained) .40 (air-entrained)

Aggregate size (maximum) Air Entrainment 5% 1-1/2% (1" max. aggregate) 7% 1-1/2% (½" max. aggregate)

Use accelerating admixtures in cold weather only when approved by Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.

Do not use calcium chloride.

Do not use set retarding admixtures during hot weather only when approved by Architect/Engineer.

Add air entraining agent to normal weight concrete mix for work exposed to exterior.

PART 3 - EXECUTION

EXAMINATION:

Verify site conditions under provisions of Section 01039.

Verify requirements for concrete cover over reinforcement.

Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

PREPARATION:

Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

In locations where new concrete is dwelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

PLACING CONCRETE:

Place concrete in accordance with ACI 301, ACI 18.

Notify Architect/Engineer minimum 24 hours prior to commencement of operations.

Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, are not disturbed during concrete placement.

Extend joint filler from bottom of slab to within ½ inch of finished slab surface. Conform to Section 07900 for finish joint sealer requirements.

Install joint devices in accordance with manufacturer's instructions.

Install construction joint devices in coordination with floor slab pattern placement

sequence. Set top to required elevations. Secure to resist movement by wet concrete.

Install joint device anchors. Maintain correct position to allow joint cover to be flush with floor and wall finish.

Install joint covers in one piece longest practical length, when adjacent construction activity is complete.

Apply sealants in joint devices in accordance with Section 07900.

Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

Place concrete continuously between predetermined expansion, control, and construction joints.

Do not interrupt successive placement; do not permit cold joints to occur.

Saw cut joints within 24 hours after placing. Use 3/16 inch thick blade, cut into 1/4 depth of slab thickness.

CONCRETE FINISHING:

Provide formed concrete surfaces to be left exposed with rough formed finish.

CURING AND PROTECTION:

Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

Cure concrete floor surfaces to requirements of Section 03370.

FIELD QUALITY CONTROL:

Provide free access to Work and cooperate with appointed firm.

Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.

Tests of cement and aggregates may be performed to ensure conformance with specified

requirements.

Five concrete test cylinders will be taken for every 75 or less cu yds of each class of concrete placed.

One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.

One slump test will be taken for each set of test cylinders taken.

PATCHING:

Allow Architect/Engineer to inspect concrete surfaces immediately upon removal of forms.

Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/Engineer upon discovery.

Patch imperfections in accordance with ACI 301.

DEFECTIVE CONCRETE:

Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

Repair or replacement of defective concrete will be determined by the Architect/Engineer.

Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

END OF SECTION

**SECTION 04200
UNIT MASONRY SYSTEM**

PART 1 GENERAL

SECTION INCLUDES:

Brick units.

Reinforcement, anchorage, and accessories.

SUBMITTALS:

Product Data: Provide data for masonry units and fabricated wire reinforcement.

Samples: Submit three samples of face brick to illustrate color, texture and extremes of color range.

QUALITY ASSURANCE:

Perform Work in accordance with ACI 530 and ACI 530.1.

QUALIFICATIONS:

Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

ENVIRONMENTAL REQUIREMENTS:

Maintain materials and surrounding air temperature to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry work.

Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 - PRODUCTS

MANUFACTURERS - BRICK UNITS:

Brick Use brick units matching existing brick masonry as closely as possible.

Joint Filler: Closed cell polyurethane; oversized 50 percent to joint width, self-expanding; 3/4 inch wide by maximum lengths.

Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

PART 3 - EXECUTION

EXAMINATION:

Verify that field conditions are acceptable and are ready to receive work.

Verify items provided by other sections of work are properly sized and located.

Verify that built-in items are in proper location, and ready for roughing into masonry work.

PREPARATION:

Direct and coordinate placement of metal anchors supplied to other sections.

Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

COURSING:

Establish lines, levels, and coursing indicated. Protect from displacement.

Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

Brick Units:

Bond: Running unless noted otherwise.

Coursing: Three units and three mortar joints to equal 8 inches

Mortar Joints: Concave.

PLACING AND BONDING:

Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

Lay hollow masonry units with face shell bedding on head and bed joints.

Buttering corners of joints or excessive furrowing of mortar joints are not permitted.

Remove excess mortar as work progresses.

Interlock intersections and external corners.

Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

REINFORCEMENT AND ANCHORAGE - MASONRY VENEER:

Install horizontal joint reinforcement 16 inches.

Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

Place joint reinforcement continuous in first and second joint below top of walls.

Lap joint reinforcement ends minimum 6 inches.

Secure wall ties to stud framed back-up and masonry backup and embed into masonry veneer at maximum 16 inches vertically and 32 inches horizontally. Place at maximum 8 inches on each way around perimeter of openings, within 12 inches of openings.

Reinforce joint comers and intersections with strap anchors 16 inches on.

GROUTED COMPONENTS:

Lap splices minimum 24 bar diameters.

Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

Place and consolidate grout fill without displacing reinforcing.

At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

BUILT-IN WORK:

As work progresses, install built-in metal door and glazed frames, fabricated metal frames, window frames, anchor bolts, plates, and other items to be built-in the work and furnished by other sections.

Install built-in items plumb and level.

Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with

grout. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

Do not build in organic materials subject to deterioration.

TOLERANCES:

Maximum Variation from Unit to Adjacent Unit: 1/16 inch.

Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

Maximum Variation from Plumb: 1/4 inch per story noncumulative; 1/2 inch in two stories or more.

Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

Maximum Variation of joint Thickness: 1/8 inch in 6 ft.

CUTTING AND FITTING:

Cut and fit for chases, pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.

Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

CLEANING:

Remove excess mortar and mortar smears as work progresses.

Replace defective mortar. Match adjacent work.

Clean soiled surfaces with cleaning solution.

Use non-metallic tools in cleaning operations.

PROTECTION OF FINISHED WORK:

Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.

END OF SECTION

**SECTION 05120
STRUCTURAL STEEL**

PART 1 - GENERAL

SECTION INCLUDES:

Structural steel framing members.
Base plates.
Grouting under base plates.

REFERENCES:

AISC - Code of Standard Practice - Manual of Steel Construction - Allowable Stress Design (ASD).
ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.
ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.
ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.
ASTM A325 - High Strength Bolts for Structural Steel Joints.
ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
AWS A2.4 - Symbols for Welding, Brazing, and Nondestructive Examination.
AWS D]. I -Structural Welding Code.
SSPC (Steel Structures Painting Council) - Painting Manual.
UL - Fire Resistance Directory.

SUBMITTALS FOR REVIEW:

Shop Drawings: Shop drawings shall indicate profiles, sizes, spacing, and locations of structural members, openings, attachments, and fasteners. Connections and cambers. Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.

Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

QUALITY ASSURANCE:

Fabricate structural steel members in accordance with AISC Code of Standard Practice.

Perform work in accordance with AISC Section 10 when indicated on drawings.

Fabricator: Company specializing in performing the work of this section with minimum five years experience.

Erector: Company specializing in performing the work of this section with minimum five years experience.

PART 2 - PRODUCTS

MATERIALS:

Structural Steel Members: ASTM A572/A572M, Grade 50.

Structural Tubing: ASTM A500, Grade B.

Pipe: ASTM A53, Grade B. Type E or S.

Bolts: ASTM A325 bolts.

Anchor Bolts: ASTM A307.

Welding Materials: AWS DI.1; type required for materials being welded.

Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7,000 psi at 28 days.

Touch-Up Primer for Galvanized Surfaces: SSPC 20 Type I Inorganic.

FABRICATION:

Fabricate connections for bolt, nut, and washer connectors.

Develop required camber for members.

FINISH:

Prepare structural component surfaces in accordance with SSPC SP 3.

Shop prime structural steel members. Do not prime surfaces that will be fireproofed, **field** welded, in contact with concrete, or high strength bolted.

Galvanize structural steel members to ASTM A1 23 where noted on drawings.

SOURCE QUALITY CONTROL AND TESTS:

General: Materials and fabrication procedures are subject to inspection and tests in mill, shop,

and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.

Promptly remove and replace materials or fabricated components that do not comply.

PART 3 - EXECUTION

EXAMINATION:

Verification of existing conditions prior to beginning work.

ERECTION:

Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

Field weld components where indicated on shop drawings.

Field connect members with threaded fasteners; torque to required resistance.

Do not **field** cut or alter structural members without approval of Architect/Engineer.

After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

Grout under base plates. Trowel grouted surface smooth, splay neatly to 45 degrees.

ERECTION TOLERANCES:

Specified AISC tolerances for structural steel and AESS.

FIELD QUALITY CONTROL:

Field inspection, testing of bolt torqueing, welds.

END OF SECTION

**SECTION 05210
STEEL JOISTS****PART 1 - GENERAL****RELATED DOCUMENTS:**

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

DESCRIPTION OF WORK:

Extent of steel joists is shown on drawings, including basic layout and type of joists required.

QUALITY ASSURANCE:

Provide joists fabricated in compliance with the following, and as herein specified.

Steel Joist Institute (SJI) Standard Specifications, Load Tables and Weight Tables for;

K-Series Open Web Steel Joists

Qualification of Field Welding: Qualify welding processes and welding operators in accordance with American Welding Society (AWS) "Standard Qualification Procedure".

Joists welded in place are subject to inspection and testing. Expense of removing and replacing any portion of steel joists for testing purposes will be born by Owner if welds are found to be satisfactory. Remove and replace work found to be defective and provide new acceptable work.

SUBMITTALS:

Product Data: Submit manufacturer's specifications and installation instructions for each type of joist and accessories. Include manufacturer's certification that joists comply with SJI "Specifications".

Shop Drawings: Submit detailed drawings showing layout of joist units, special connections, jointing and accessories. Include mark, number, type, location and spacing of joists and bridging.

Verify all field conditions and field measurements to make work fit accurately. Do not fabricate any materials until such verification has been made.

DELIVERY, STORAGE AND HANDLING:

Deliver, store and handle steel joists as recommended in SJI "Specifications". Handle and store joists in a manner to avoid deforming members and to avoid excessive stresses.

PART 2 - PRODUCTS

MATERIALS:

Steel: Comply with SJI "specifications".

Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular hexagon type, low carbon steel.

FABRICATION:

General: Fabricate steel joists in accordance with SJI "Specifications".

Holes in Chord Members: Provide holes in chord members where shown for securing other work to steel joists; however, deduct area of holes from the area of chord when calculating strength of member.

Extended Ends: Provide extended ends on joists where shown, complying with manufacturer's standards and requirements of applicable SJI "Specifications" and load tables.

Bridging: Provide horizontal or diagonal type bridging for "open web" joists, complying with SJI "Specifications", as shown on the plans.

Provide bridging anchors for ends of bridging lines terminating at walls or beams.

End Anchorage: Provide end anchorages to secure joists to adjacent construction, complying with SJI "Specifications", unless otherwise indicated.

Header Units: Provide header units to support tail joists at openings in floor or roof system not framed with steel shapes.

Shop Painting: Remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories before application of shop paint.

Apply one shop coat of primer paint to steel joists and accessories, by spray, dipping, or other method to provide a continuous dry paint film thickness of not less than 0.50 mil.

PART 3 - EXECUTION**ERECTION:**

Place and secure steel joists in accordance with SJI "Specifications", final shop drawings, and as herein specified.

Placing Joists: Do not start placement of steel joists until supporting work is in place and secured. Place joists on supporting work, adjust and align in accurate locations and spacing before permanently fastening.

Provide temporary bridging, connections, and anchors to ensure lateral stability during construction.

Bridging: Install bridging simultaneously with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.

FASTENING JOISTS:

Field weld joists to supporting steel framework in accordance with SJI "Specifications" for type of joists used. Coordinate welding sequence and procedure with placing of joists.

Touch-Up Painting: After joist installation, paint field bolt heads and nuts, and welded areas, abraded or rusty surfaces on joists and steel supporting members. Wire brush surfaces and clean with solvent before painting. Use same type of paint as used for shop painting.

Control welding to avoid burn through of the joist chords. Any joist exhibiting holes in the chords from welding shall be removed from the structure and replaced with a new joists.

END OF SECTION

**SECTION 05300
METAL DECKING**

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provision of Contract, including General and Supplementary Conditions and Division-1 specification sections apply to work of this section.

DESCRIPTION OF WORK:

Extent of metal decking is indicated on drawings, including basic layout and type of deck units required.

QUALITY ASSURANCE:

Codes and Standards: Comply with provisions of the following codes and standards, except as otherwise indicated or specified:

AISI "Specification for the Design of Cold-Formed Steel Structural Members".

AWS "Structural Welding Code".

SDI "Design Manual for Floor Decks and Roof Decks".

SDI "Basic Design Specifications".

Qualification of Field Welding: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

SUBMITTALS:

Product Data: Submit manufacturer's specifications and installation instructions for each type of decking and accessories. Include manufacturer's certification as may be required to show compliance with these specifications.

Shop Drawings: Submit detailed drawings showing layout and types of deck panels, anchorage details, and conditions requiring closure panels, supplementary framing, sump pans, cant strips, cut openings, special jointing or other accessories. Shop drawings to define welding pattern, and the pattern shall be as shown on the construction documents.

PART 2 - PRODUCTS

MATERIALS:

Metal deck shall conform to applicable requirements of the Steel Deck Institute for Type B, high tensile strength, wide rib, painted corrugated metal deck.

Steel for Painted Metal Deck Units: ASTM A 611, Grade C.

Miscellaneous Steel Shapes: ASTM A 36.

Paint: Manufacturer's baked-on, rust-inhibitive paint, for application to metal surfaces which have been chemically cleaned and phosphate chemical treated.

Flexible Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber.

Store all materials on sills off of the ground in such a manner that pieces lie flat without bending or distortion.

FABRICATION:

Floor Deck Units: Provide deck configurations complying with SDI floor and "Roof Deck and Floor Deck Specifications", of 20-gage metal thickness, 1-1/2" depth and 36" width.

PART 3 - EXECUTION**INSTALLATION:**

General: Install deck units and accessories in accordance with manufacturer's recommendations and final shop drawings, and as specified herein.

Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before being permanently fastened. Do not stretch or contract side lap interlocks.

Place deck units in straight alignment for entire length of run of cells and with close alignment between cells at ends of abutting units.

Place deck units flat and square, secured to adjacent framing without warp or excessive deflection.

Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.

Fastening Deck Units:

Weld deck to support as follows.

Fasten floor deck units to steel supporting members by not less than 1/2" diameter fusion welds or elongated welds of equal strength, spaced not more than 12" o.c. at every support, and at closer spacing where required for lateral force resistance. In addition, secure deck to each supporting member in ribs where side laps occur.

Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work.

Use welding washers.

Cutting and Fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown.

Reinforcement at Openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking and support of other work shown.

Provide manufacturer's standard hanger attachment devices.

Touch-up painted surfaces with same type of shop paint used on adjacent surfaces.

END OF SECTION

**SECTION 05520
HANDRAILS AND RAILINGS**

GENERAL:

Strength of handrails and top rails: Capable of withstanding the following loads:

Concentrated load of 200 lbs. applied at any point in any direction.

Uniform load of 50 lbs. linear feet applied simultaneously in both vertical and horizontal directions.

Strength of Guards: Intermediate rails, balusters and panel fillers capable of withstanding a uniform load of 25 lbs. per square foot of gross area of guard, including open areas.

Submittals: In addition to product data, submit the following:

Shop drawings showing railing layout and details of components.

MATERIALS/FABRICATION:

Steel Tubing: Cold-formed, ASTM A 500; or hot-rolled, ASTM A 501.

Steel Plates, Shapes and Bars: ASTM A 36.

Non-Shrink, Non-Metallic Grout: CE CRD-C621, non-staining, non-corrosive, non-gaseous; recommended by manufacturer for types of application indicated here.

Fasteners: Same material as fastened metal; concealed unless otherwise indicated or unavoidable and standard with system indicated.

Anchors and Inserts: As required for secure anchorage of handrails and railings to concrete, masonry and other adjoining work; non-corrosive to materials joined.

Fabrication General: Fabricate handrails and railings of 2" diameter tubing to design dimensions and details shown and required to support design loadings indicated.

Welded Connections: Interconnect steel tube handrails and railing members by welding and grind smooth and flush.

Form bends by use of prefabricated elbow fittings and radius bends.

Ferrous Metal Paint Finish: Shop-primed after cleaning and pretreatment.

INSTALLATION:

Set work accurately in location, alignment and elevation, plumb and free from rack.

Comply with manufacturer's recommendations for field connections of handrail and railing members. Comply with AWS specifications where welding is required or indicated.

Anchor posts in concrete by insertion into preset connections of grouting of annular space between sleeve and post. Mix and place grout to comply with grout manufacturer's directions.

Anchor posts to metal surfaces with fittings designed for this purpose.

Anchor posts to concrete, metal or wood in a recessed manner so as to allow finish materials to cover all flanges or fasteners.

END OF SECTION

SECTION 06100
ROUGH CARPENTRY

Lumber: Provide lumber, S4S, S-dry unless otherwise indicated, grade marked, complying with PS 20 and the following requirements.

Light-Framing (2"-4" thick, 2"-4" wide): Grade and species indicated.
Spruce-Pine-Fir.
Southern Yellow Pine.

Studs (2"-4" thick, 2"-6" wide, 10' and shorter): "Stud" nor No. 3 Structural Light Framing grade, any species graded under WWPA, WCLIB, SPIB or NLGA rules.

Structural Joists and Planks (2"-4" thick, 2" and wider): SYP grade complying with requirements for allowable unit stresses.

FB (minimum fiber stress in bending): 1500 psi.

E (minimum modulus of elasticity): 1,500,000 psi.

Concealed Boards: Standard grade, any species graded under WWPA rules or No. 3 grade Southern Pine graded under SPIB rules.

Lumber for Miscellaneous Uses: Unless otherwise indicated, provide standard grade lumber for support of other work, including cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.

For following type of applications where exposure durability classification or span rating is not given, provide EXPOSURE 1 and rating required to suit support spacing indicated.

Roof Sheathing: APA rated sheathing, OSB inner seal 3/4" thickness or approved equal.

Plywood: Provide APA graded panels complying with PS 1 ANSI A199.1 for type of application indicated.

Backing for Electrical and Telephone Equipment: APA C-D Plugged interior with exterior glue, fire-retardant treated, 1/2" thick except as otherwise indicated.

Fasteners and Anchorages: Of size, type, material and finish suited to application shown and complying with applicable standards including FS FF-N-105 and FF-W-92 and ANSI B18.6.1. Provide metal hangers and framing anchors for size and type recommended for intended use by manufacturer.

Preservative pressure treat lumber with water-borne preservatives to comply with AWPA C2 and C9, respectively, and with requirements indicated below:

Treat cants, nailers, blocking, stripping and similar items in conjunction with roofing, flashing, vapor barriers, and waterproofing.

Install rough carpentry work to comply with "Manual of House Framing" by National Forest Products Association (N.F.P.S.) and with recommendations of American Plywood Association (APA), unless otherwise indicated. For sheathing, underlayment and other products not covered in above standards, comply with recommendations of manufacturer of product involved for use intended. Set carpentry work to required levels and lines, with members plumb and true and cut to fit.

Securely attach carpentry work to substrates and supporting members using fasteners of size that will not penetrate members where opposite side will be exposed to view or receive finish materials. Install fasteners without splitting wood; fasten panel products to allow for expansion at joints unless otherwise indicated.

Provide wood framing members of size and spacing indicated; do not splice structural members between supports. Firestop concealed spaces with wood blocking not less than 2" thick, if not blocked by other framing members.

Cutting or penetration of existing or new structural members shall be done only with permission of Architect.

END OF SECTION

SECTION 06192
PREFABRICATED WOOD TRUSSES

PART 1 - GENERAL

RELATED DOCUMENTS:

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

Standards: Comply with NFPA National Design Specification and with TPI standards including "Quality Control Manual", "Commentary and Recommendations for Handling and Erecting Wood Trusses", "Commentary and Recommendations for Bracing Wood Trusses", and the following:

"Design Specification for Metal Plate Connected Wood Trusses".

DESCRIPTION OF WORK:

Work Included: Furnish all design, fabrication, materials, shipment erection complete and other field work for the trusses as shown in the Drawings and described in these specifications. Work shall include but not be limited to:

Roof trusses

Related work described elsewhere:

Structural Steel: Section 05120

Rough Carpentry: Section 06100

SUBMITTALS:

In addition to product data for truss components, submit the following:

Shop drawings showing sizes, design values, materials, layout and dimensional relationships of components as well as bearing and anchorage details.

To extent engineering design considerations are fabricator's responsibility, submit design analysis and test reports indicating truss performance characteristics. Comply with requirements.

Provide shop drawings which have been signed and stamped by a structural engineer licensed to practice in Indiana, where trusses are fabricated.

Handle and store trusses with care and to comply with TPI recommendations to avoid damage from bending, overturning or other cause.

PART 2 - PRODUCTS

Lumber: Provide lumber S4S, S-Dry unless otherwise indicated grade marked, complying with PS 20 and requirements indicated.

Lumber Species: Any softwood, at Contractor's option, graded under WWPA, WCLB, SPIB or NLGA rules, which complies with other requirements.

Lumber Grade: Any grade fulfilling requirements indicated.

Metal Connector Plates: Metals as indicated, not less than 0.036" thick, coated thickness.

Galvanized Sheet Steel: ASTM A 446, Grade A, G60.

Electrolytic Zinc-Coated Steel Sheet: ASTM A 591, Class C, with minimum structural quality equivalent to ASTM A 446, Grade A.

Stainless Steel: ASTM A 167, Type 304, with minimum structural quality equivalent to ASTM A 446, Grade A.

Fasteners and Anchorages: Of size, type, material and finish suited to application shown and complying with applicable standards including FS FF-N-105 and FF-W-92, and ANSI B18.6.1.

Fabrication: Fabricate and assemble trusses to provide units of configuration indicated, with closely fitted joints and connector plates securely fastened to wood members.

Design Loads: The following criteria shall be used as specified for the determination, application, and combination of live load, snow load and wind load.

Indiana Building Code 2014

American National Standards Institute's "Minimum Design Loads for Buildings and other Structures".

Roof Design Load:

L.L. 30 psf - top chord
D.L. 6 psf - bottom chord
D.L. 4 psf - top chord
40 psf Total Load
15 psf Wind Load

PART 3 - EXECUTION

Installation: Install trusses to comply with TPI referenced standards and other indicated requirements.

END OF SECTION

**SECTION 06200
FINISH CARPENTRY**

PART 1 - GENERAL

SECTION INCLUDES:

Finish carpentry items.
Installation of finish hardware.

RELATED SECTIONS:

Section 06114 - Wood Blocking and Curbing: Grounds and support framing.
Section 06410 - Custom Casework.
Section 08211 - Flush Wood Doors.
Section 09521 - Acoustical Wall Panels.
Section 09900 - Painting: Painting and finishing of finish carpentry items.

REFERENCES:

AHA A13-5.4 - Basic Hardboard; American Hardboard Association.

ANSI A208.1 - Wood Particle Board.

ASTM E84 - Standard Test Method for Surface Building Characteristics of Building Materials.

AWI P-200 - Architectural Woodwork Quality Standards, Architectural Woodwork Institute.

AWPA C2 - Lumber, Timbers, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes, American Wood Preservers Association.

BHMA A156.9 - American National Standard for Cabinet Hardware.

HPVA HP- I - Voluntary Standard for Hardwood and Decorative Plywood; Hardwood Plywood Manufacturer's Association.

NEMA LD 3 - High Pressure Decorative Laminates: National Electric Manufacturer's Association.

NWWDA I.S.4 - Industry Standard for Water-Repellent Preservative Non-Pressure Treatment for Millwork: National Wood Window and Door Association.

NIST PS I - Construction and Industrial Plywood.

NIST PS 20 - American Softwood Lumber Standard.

WIC - Manual of Millwork; Woodwork- Institute of California.

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.

Wall bumpers.

Wall corner guards.

Rough carpentry is specified in another Division-6 section.

Builder's hardware and wood doors are specified in Division-8 sections.

Architectural woodwork is specified in another Division-6 section.

SUBMITTALS FOR REVIEW:

Section 01300-Submittals: Procedures for Submittals.

Product Data: Provide instructions for attachment hardware, and finish hardware.

Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, accessories, to a minimum scale of 1-1/2 inch to 1 ft.

Wall Corner Guards: Manufacturer's product literature and installation instructions.

Samples:

Submit two samples of finish plywood, 12 x 12 inch in size illustrating wood grain and specified finish.

Submit two samples of wood trim 12 inch long.

Submit two samples of pin tackable panel fabric selections.

Interior standing and running trim and wood wall bumpers:

2'-0" full board or molding width, finished.

QUALITY ASSURANCE:

Perform work in accordance with AWI Architectural Woodwork Quality Standards, Premium Grade.

Fabricator: Company specializing in fabricating the products specified in this section with minimum 3 years experience.

DELIVERY, STORAGE, AND PROTECTION:

Section 01600 - Material and Equipment: Transport, handle, store, and protect products.

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.

Protect work from moisture damage.

PROJECT CONDITIONS:

Section 01039 - Coordination and Meetings.

Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

Coordinate the work with plumbing rough-in, electrical roughing, installation of associated and adjacent components.

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 conditions have been stabilized and will be maintained in installation areas.

PART 2 - PRODUCTS

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 patterns as shown, unless otherwise indicated.

LUMBER MATERIALS:

Hardwood Lumber: Graded in accordance with AWI Premium; red oak and maple species. Sawn, maximum moisture content of 6 percent; with plain sawn grain of quality suitable for transparent finish.

Moisture Content of Hardwood Lumber: Provide kiln-dried lumber having a moisture content from time of manufacture until time of installation within the ranges required in the referenced woodworking standard.

Interior Finish Carpentry:

Standing Running Trim For Transparent Finish: White Birch manufactured to sizes and patterns (profile) shown from selected First Grade Lumber (NHLA); complying with following grade requirements of referenced woodworking standard, for quality of materials and manufacture:

Grade: Premium

SHEET MATERIALS:

Hardwood Plywood: HPVA HP- I Graded in accordance with AWI Premium; veneer particleboard core, type of glue recommended for application; red oak face species, plain sawn cut.

ADHESIVE:

Adhesive: Type recommended by AWI to suit application.

FASTENERS:

Fasteners: Of size and type to suit application.

Concealed Joint Fasteners: Threaded steel.

Fasteners and Anchorages: Provide nails, screws and other anchoring devices of the type, size, materials, and finish required for application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.

ACCESSORIES:

Lumber for Shimming, Blocking: Soffit wood lumber of spruce, pine or fir species.

HARDWARE:

Shelf Standards: Recessed style, dull chrome finish; 255 manufactured by K & V.

Shelf Brackets: Shelf style, dull chrome finish; 256 manufactured by K & V.

FABRICATION:

Fabricate to AW Premium standards.

Shop assemble work for delivery to site, permitting passage through building openings.

Fit exposed sheet material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.

Shop prepare and identify components for book match grain matching during site erection.

When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

SHOP FINISHING:

Sand work smooth and set exposed nails and screws.

Apply wood filler in exposed nail and screw indentations.

On items to receive transparent finishes, use wood filler which matches surrounding surfaces and of types recommended for applied finishes.

Stain, seal, and varnish exposed to view surfaces. Brush apply only.

Seal internal surfaces and semi-concealed surfaces. Brush apply only.

Prime paint surfaces in contact with cementitious materials.

PART 3 - EXECUTION

EXAMINATION:

Section 01039-Coordination and Meetings: Verification of existing conditions before starting work.

Verify adequacy of backing and support framing.

Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

INSTALLATION:

Install work in accordance with AWI Premium quality standard.

Install components and trim with screws.

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 manufacturer 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.

Carefully scribe work abutting other components, with maximum caps of 1/2 inch. Do not use additional overlay trim to conceal larger caps.

Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum lengths 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.

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. Use fine finishing nails for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated.

Install wall corner guards to comply with manufacturer's instructions. Note that 18-gage metal studs or solid wood blocking are required as back up.

SITE APPLIED WOOD TREATMENT:

Apply preservative treatment in accordance with manufacturer's instructions.

Brush apply two coats of preservative treatment on wood in contact with cementitious materials. Treat site-sawn cuts.

Allow preservative to dry prior to erecting members.

ERECTION TOLERANCES:

Maximum Variation from True Position: 1/16 inch.

Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

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

**SECTION 07213
BATT INSULATION**

PART 1 - GENERAL

SECTION INCLUDES:

Batt insulation and vapor retarder in exterior wall and ceiling roof construction.

Batt insulation for filling perimeter window and door shim spaces, crevices in exterior wall and roof.

REFERENCES:

ASTM C66 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

NFPA 255 - Test of Surface Burning Characteristics of Building Materials.

UL 723 - Tests for Surface Burning Characteristics of Building Materials.

SUBMITTALS:

Product Data: Provide data on product characteristics, performance criteria, limitations.

COORDINATION:

Coordinate the work with Section 07191 for installation of vapor retarder.

PART 2 - PRODUCTS

MANUFACTURERS - INSULATION MATERIALS:

Owens Corning
Manville.
Certaineed Corporation

Batt Insulation

MATERIALS:

Batt Insulation: ASTM C665 un-faced fiberglass fiber batt-friction fit conforming to the following:

Thermal Resistance: R of 3.0 per 1" thickness.

Facing: Un-faced.

Sheet Vapor Retarder: plastic (visqueen) barrier

PART 3 - EXECUTION

EXAMINATION:

Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

INSTALLATION:

Install insulation in accordance with insulation manufacturer's instructions.

Install in exterior walls, roof spaces without gaps or voids. Do not compress insulation.

Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation.

Coordinate work of this section with construction of vapor retarder specified in Section 07191.

Coordinate work of this section with construction of air barrier seal specified in Section 07195.

END OF SECTION

**SECTION 07310
SHINGLES**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of shingles is shown on drawings.

Types of shingle applications specified in this section including the following:

Asphalt fiberglass shingle roofing (only as part of Alternate 3 work)

QUALITY ASSURANCE:

UL Listing: Provide labeled materials which have been tested and listed by UL for Class and Rating indicated for each shingle type required.

Samples: Submit full range of samples for color and texture selection. After selection, submit 2 full size shingles for verification of each color/style/texture selected.

DELIVERY, STORAGE AND HANDLING:

Deliver materials in manufacturer's unopened, labeled containers.

Store materials to avoid water damage, and store rolled goods on end. Comply with manufacturer's recommendations for job-site storage and protection.

SPECIFIED PRODUCT WARRANTY:

Provide shingle manufacturer's warranty on installed work, agreeing to pay for repair or replacement of defective shingles as necessary to eliminate leaks. Period of warranty is 20 years from date of substantial completion.

PART 2 - PRODUCTS

ASPHALT SHINGLES MATERIALS:

Color as selected by Architect and as standard by manufacturer.

Products: Subject to compliance with requirements, provide the following:

Style and color to match existing building.

Asphalt Roofing Felt: No. 15, un-perforated organic felt, complying with ASTM D 226, 36" wide, approximate weight 18 pounds per square.

Hip and Ridge Shingles: Manufacturer's standard factory precut units to match shingles.

Nails: Aluminum or hot-dip galvanized 11 or 12 gauge sharp pointed conventional roofing nails with barbed shanks, minimum 3/8" diameter head, of sufficient length to penetrate minimum 3/4" into solid decking or to penetrate through plywood sheathing.

Metal Drip Edge: Minimum .032" anodized finish aluminum sheet, brake-formed to provide 3" roof deck flange, and 1-1/2" fascia flange with 3/8" drip at lower edge. Furnish in 10' lengths.

PART 3 - EXECUTION

INSPECTION:

Installer of shingles must examine substrate and conditions under which shingling work is to be performed and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with shingling work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

PREPARATION OF SUBSTRATE:

Clean substrate of any projections and substances detrimental to shingling work.

Coordinate installation of shingles with flashing and other adjoining work to ensure proper sequencing.

INSTALLATION:

General: Comply with instruction and recommendations of shingle manufacturer, except to extent more stringent requirements are indicated.

Asphalt Shingles:

Underlayment: Apply one layer felt horizontally over entire surface, lapping succeeding courses 2" minimum and fastening with sufficient nails to hold in place until shingle application.

Ice Protection Underlayment: In addition to felt underlayment, install continuous strip of ice protection underlayment along eaves to a point 12" minimum beyond wall line; Grace Ice Shield or equal.

Shingles: Install starter strip of inverted shingles with tabs removed; fasten shingles in manufacturer's recommended pattern, weather exposure and number of fasteners per shingle. Use horizontal and vertical chalk lines to ensure straight coursing.

Comply with installation details and recommendations of shingle manufacturer and NRCA Steep Roofing Manual.

Flashing and Edge Protection: Install metal flashing and edge protection as shown and in compliance with details and recommendations of the NRCA Steep Roofing Manual.

END OF SECTION

SECTION 07532
SINGLE PLY ROOFING – TOTALLY ADHERED - CONVENTIONAL

PART 1 - GENERAL

SECTION INCLUDES:

Wood sheathing over wood rafters.

Insulation.

Membrane roofing, base flashings, roofing, membrane expansion joints, and counter flashings.

RELATED SECTIONS:

Section 06114 - Wood Blocking and Curbing: Wood nailers and cant strip.

Section 07191 - Vapor Retarders.

Section 07620 - Sheet Metal Flashing and Trim: Counterflashing

Section 15430 - Plumbing Specialties: Roof drains and sumps.

Section 15781 - Packaged Roof Top Air Conditioning Units: Prefabricated curb for mechanical equipment.

REFERENCES:

ASTM C578 - Preformed, Cellular Polystyrene Thermal Insulation.

ASTM D412 - Rubber Properties in Tension.

ASTM D471 - Standard Test Method for Rubber Property - Effect of Liquids.

ASTM D624 - Rubber Property - Tear Resistance.

ASTM D746 - Brittleness Temperature of Plastics and Elastomeric by Impact.

ASTM D822 - Practice for Operating Light and Water-Exposure Apparatus (Carbon-Arc) Type for Testing, Paint, Varnish, Lacquer, and Related Products.

ASTM DI 004 - Initial Tear Resistance of Plastic Film and Sheeting.

ASTM E96 - Water Vapor Transmission of Materials.

FM 4470 (Factory Mutual Engineering Corporation) - Roof Assembly Classifications.

NRCA (National Roofing Contractors Association) - Roofing, and Waterproofing, Manual.

SPRI - Wind Design Guide for Single Ply Roofing Systems.

UL 790 - Fire Hazard Classifications.

SYSTEM DESCRIPTION:

Elastomeric Sheet Membrane Conventional Roofing System: One ply membrane system with insulation.

SUBMITTALS FOR REVIEW:

Section 01300-Submittals: Procedures for submittals.

Product Data: Provide characteristics on membrane materials, flashing, materials, and insulation.

Shop Drawings: Indicate setting plan for tapered insulation, joint or termination detail conditions and conditions of interface with other materials.

Samples:

Submit two 12 x 12 inch in size illustrating insulation and membrane.

SUBMITTALS FOR INFORMATION:

Section 01300-Submittals: Procedures for submittals.

Manufacturer's Installation Instructions: Indicate special precautions required for seaming the membrane.

QUALITY ASSURANCE:

Manufacturer: Company specializing in manufacturing the products specified in this section with three years documented experience.

Applicator: Company specializing in performing the work of this section with five years documented experience and approved by system manufacturer.

Perform Work in accordance with manufacturer's instructions.

REGULATORY REQUIREMENTS:

Conform to FM code for roof assembly fire hazard requirements.

UL 790: Class A Fire Hazard Classification.

FM 4470: Roof Assembly Classification, of Class I Construction, wind uplift requirement of 1-90, in accordance with FM Construction Bulletin 1-28.

PRE-INSTALLATION MEETING:

Section 01039 - Coordination and Meetings: Pre-installation meeting

Convene one week before starting work of this section.

DELIVERY, STORAGE, AND PROTECTION:

Section 01600 - Material and Equipment: Transport, handle, store, and protect products.

Store products in weather protected environment, clear of ground and moisture.

ENVIRONMENTAL REQUIREMENTS:

Section 01600 - Material and Equipment: Environmental conditions affecting products on site.

Do not apply roofing membrane during inclement weather or ambient temperatures below 40 degrees F.

Do not apply roofing membrane to damp or frozen deck surface.

Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

COORDINATION:

Coordinate work under provisions of Section 01039.

Coordinate the work with the installation of associated metal flashings as the work of this section proceeds.

WARRANTY:

Provide written warranty, signed by Manufacturer of primary roofing materials and his authorized

Installer, agreeing to replace/repair defective materials and workmanship. Repairs and replacements required because of events beyond Contractor's/Installer's/Manufacturer's control (and which exceed performance requirements) shall be completed by Contractor/Installer and paid for by Owner.

Warranty period is 15 years after date of substantial completion.
Section 01700 - Contract Closeout.

PART 2 - PRODUCTS

MANUFACTURERS - MEMBRANE MATERIAL:

Carlisle Syntec Systems.

Firestone Building Products.

Genflex Roofing Systems.

Section 01600 - Materials and Equipment: Product options and substitutions.
Substitutions: Permitted.

MEMBRANE AND ASSOCIATED MATERIALS:

Membrane: EPDM non-reinforced, 0.060 inch thick, maximum 600 inch wide roll; black color; conforming to the following criteria:

Properties	Test	Results
Tensile Strength	ASTM D412	1630 psi.
Elongation	ASTM D412	5203
Tear Strength	ASTM D624	230 lbf/in
Water Absorption	ASTM D471	2%
Moisture Vapor Penns	ASTM E96	0.05 penns
Low Temperature Brittleness	ASTM D746	-085 F

Seaming Materials: As recommended by membrane manufacturer.

SUBSTRATE COVERING MATERIALS:

Gypsum Sheathing: ASTM C79; 5/8 inch thick; moisture resistant, silicone treated fire rated. Product: Georgia-Pacific "Dens-Deck" Gypsum Sheathing Board.

Sheet Vapor Retarder: Conforming to UL and FM requirements; plastic sheet; including compatible fire retarder adhesive.

INSULATION:

Insulation: ASTM C1013 polyisocyanurate rigid board both faces surfaced with polyethylene treated kraft paper, with the following characteristics:

1. Board Density 2 lb/cu ft
2. Board Size 48 x 48 inch
3. Thermal Conductivity K factor of .17 as determined by ASTM C 177 aged 12 months at 75 degrees F.
4. Board Edges square

OR

Insulation: ASTM C578 Type VI, extruded polystyrene board with natural skin surfaces, face, with the following characteristics:

1. Board Density 1.8 lb/cu ft
2. Board Size 24 x 96 inch
3. Thermal Conductivity K factor of 0.20 ASTM C 177
4. Board Edges square

FLASHINGS:

Flexible Flashings: EPDM conforming to the following:

1. Thickness: 60 mil
2. Maximum Perm Rate: 0.05
3. Tensile Strength: 630 psi
4. Elasticity: 50 percent with full recovery without set
5. Color Black

Counterflashings: Metal, as specified in Section 07620.

Prefabricated Roof Specialties: As specified in Section 07710.

Prefabricated Control or Expansion Joint Flashing: Sheet butyl over close cell foam backing seamed to aluminum flanges; C/S Flexible Roof Bellows manufactured by C/S Group.

ACCESSORIES:

Fiber Cant and Tapered Edge Strips: Perlite board configuration as detailed.

Sheathing Adhesive: Non-combustible type, for adhering gypsum sheathing to metal deck.

Sheathing Joint Tape: Paper type.

Insulation Adhesive: As recommended by insulation manufacturer.

Insulation Joint Tape: Asphalt treated glass fiber reinforced; 6 inches wide; self-adhering

Insulation Fasteners: Appropriate for purpose intended and approved by Factory Mutual and system manufacturer; length required for thickness of material with metal washers.

Sealants: As recommended by membrane manufacturer.

Stack Boots: Flexible boot and collar with clamps for pipe stacks through membrane.

PART 3 - EXECUTION

EXAMINATION:

Verify that surfaces and site conditions are ready to receive work.

Verify deck is supported and secure.

Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains.

Verify deck surfaces are dry and free of snow or ice.

Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, and wood cant strips wood nailing, strips and reglets are in place.

PREPARATION - WOOD DECK:

Lay sheathing with long side at right angle to rafters; stagger end joints; provide support at ends.

Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.

Tape joints.

Mechanically fasten sheathing to roof rafters. in accordance with Factory Mutual manufacturer's instructions.

VAPOR RETARDER APPLICATION:

Apply vapor retarder to sheathing surface with adhesive in accordance with manufacturer's instructions.

Extend vapor retarder under cant strips and blocking to deck edge.

Lap flexible flashing over vapor barrier of wall construction to provide continuity of vapor barrier seal. Coordinate with Section 07191.

INSULATION APPLICATION:

Ensure vapor retarder is clean and dry.

Mechanically fasten insulation to deck in accordance with insulation manufacturer's instructions.

Place the second layer of insulation with joints staggered minimum 6 inches from joints of first layer.

Mechanically fasten boards as recommended by roofing system manufacturer.

Place the constant thickness first layer and the tapered thickness insulation second layer to the required slope pattern in accordance with manufacturer's instructions.

Minimum Total Insulation Thickness: 1-1/2" to match edge wood blocking, where indicated.

Place insulation boards perpendicular to roof rafters for bearing support.

Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

Lay tapered boards to slope for a distance of 24 inches back from roof drains for positive drainage.

Apply no more insulation than can be covered with membrane in same day.

Tape joints of insulation in accordance with insulation manufacturer's instructions.

MEMBRANE APPLICATION:

Apply membrane in accordance with manufacturer's instructions.

Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching

Overlap edges and ends and seal by splicing cement minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.

Shingle joints on sloped substrate in direction of drainage. Apply joint tape and seal.

Extend membrane up cant strips a minimum of 12 inches onto vertical surfaces.

Seal membrane around roof penetrations.

FLASHINGS AND ACCESSORIES:

Apply flexible flashings to seal membrane to vertical elements.

Secure to nailing strips at 4 inches.

Install prefabricated roofing control and expansion joints to isolate roof into areas as indicated and in accordance with manufacturer's instructions.

Coordinate installation of roof drains and related flashings.

Seal flashings and flanges of items penetrating membrane.

FIELD QUALITY CONTROL:

Section 01400 - Quality Assurance: Field inspection.

Correct identified defects or irregularities.

Require site attendance of roofing and insulation materials' manufacturers daily during installation of the Work.

CLEANING:

Section 01700 - Contract Closeout: Cleaning installed work.

In areas where finished surfaces are soiled by Work of this section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.

Repair or replace defaced or disfigured finishes caused by Work of this section.

PROTECTION OF FINISHED WORK:

Section 01700 - Contract Closeout: Protecting installed work.

Protect building surfaces against damage from roofing work.

Where traffic must continue over finished roof membrane, protect surfaces.

END OF SECTION

**SECTION 07620
SHEET METAL FLASHING AND TRIM**

PART 1 - GENERAL

SECTION INCLUDES:

Flashings and counterflashings and fabricated sheet metal items.

Fascia covering.

RELATED SECTIONS:

Section 07900 - Joint Sealers.

Section 09900 - Painting: Field painting

Division 15 - Roof curbs for mechanical equipment.

Section 07531 - Single Ply Roofing: Flashing sleeves and collars for mechanical items protruding through roofing membrane.

Division 16 - Roof curbs for electrical equipment.

REFERENCES:

ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate.

ASTM A36 I /A361 M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process for Roofing and Siding

ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.

FS L-P-512 - Plastic Sheet (Sheeting) Polyethylene.

DESIGN REQUIREMENTS:

Sheet Metal Flashings: Conform to the criteria of SNLACNA "Architectural Sheet Metal Manual."

Maintain one copy of document on site.

SUBMITTALS FOR REVIEW:

Section 01300 - Submittals: Procedures for submittals.

Shop Drawings: Indicate material profile, jointing patterns, jointing details, fastening methods, flashings, terminations, and installation details.

Product Data: Provide data on prefabricated components.

QUALITY ASSURANCE:

Fabricator and Installer Qualifications: Company specializing in sheet metal work with 3 years documented experience.

Prevent contact with materials which may cause discoloration or staining.

PROJECT CONDITIONS:

Section 01039 - Coordination and Meetings.

Coordinate with the work of Section 07531 for installing of roofing.

DELIVERY, STORAGE, AND PROTECTION:

Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

PART 2 - PRODUCTS**SHEET MATERIALS:**

Prefinished Galvanized Steel Sheet: Coil coated, commercial quality steel sheet, ASTM A 526 or ASTNI A527, G90 hot-dip Galvanized:

1. Finish: 70 percent "Kynar 500" or Hylar 5000" resin finish over epoxy primer; minimum system thickness 1.0 mil. Provide manufacturer's standard prime coat on underside.
 - a. Color: Selected by Architect, after contract award, from manufacturer's standard color selection.
2. Provide strippable plastic protective film on prefinished surface.
3. Manufacturer: Products of the following manufacturers, provided they comply with

requirements of the contract documents, will be among those considered acceptable:

- a. MM Systems Corporation.
- b. Petersen Aluminum Corporation.
- c. Vincent Metals Division/Rio Al-om, Inc.

Aluminum Sheet: ASTM B 209, Type 3003 H14.

Laminated Sheet Flashing: Laminate one layer of asphaltic kraft paper or asphalt-impregnated fabric to each face of a 3 ounce copper sheet.

1. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
 - a. "AFCO Cop-A-Bond Duplex"; AFCO Products, Inc.
 - b. "Cop-R-Text Duplex", York Manufacturing, Inc.

ACCESSORIES:

Fasteners: Corrosion - resistant metal. Same material and finish as flashing metal neoprene washers.

Sealant: Specified in Section 07900.

Manufacturer: Provide products complying with requirements of the contract documents and made by one of the following:

1. Merchant & Evans, Inc. Metal-Era, Inc.
2. MM Systems Corporation.
3. W. P. Hickman Company

Manufactured Coping System: Manufactured interlocking system consisting of anchor plate, splice plate/tuner, intermediate support clips, metal coping cap, and installation accessories. Systems employing exposed fasteners are not acceptable. Provide manufactured comer units, mitered and welded:

1. Anchor plate: Formed 20 gage (0.040 inch) Galvanized steel.
2. Splice plate gutter: Formed aluminum or plastic with factory installed butyl rubber sealant tape or formed rubber gaskets, to seal splice plate to underside of coping cap and to form drainage gutter.
3. Style: Sloped 1/2 inch in 12 inches from front to back.
4. Coping cap: Formed from aluminum sheet, minimum 0.050 inch thick.
5. Finish: Baked acrylic enamel. Color: As selected by the Architect from manufacturer's standard selection.

Shop Fabricated Coping System: Shop fabricated system conforming to requirements for Manufactured Coping System is acceptable.

FABRICATION:

Form sections true to shape, accurate in size, square, and free from distortion or defects.

Fabricate cleats of same material as sheet, minimum interlocking with sheet.

Form pieces in longest possible lengths.

Hem exposed edges on underside 1/2 inch; miter and seam comers.

Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

Fabricate comers from one piece with minimum 18 inch long less seam for rigidity, seal with sealant.

Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

Fabricate flashings to allow toe to extend 2 inches over roofing. Return and brake edges.

FACTORY FINISHING:

Class I Color Anodized Finish: AANIA 606. Internally colored anodic coating not less than 0.7 mils thick.

PART 3 - EXECUTION

EXAMINATION:

Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, re-lets in place, and nailing strips located.

Verify roofing termination and base flashings are in place, sealed, and secure.

PREPARATION:

Install starter and edge strips and cleats before starting installation.

Install surface mounted re-lets true to lines and levels. Seal top of re-lets with sealant.

Paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

INSTALLATION:

Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

Apply plastic cement compound between metal flashings and felt flashings.

Fit flashings tight in place. Make comers square, surfaces true and straight in planes, and lines accurate to profiles.

Seal metal joints watertight.

Seal metal joints watertight.

FIELD QUALITY CONTROL:

Section 01400 - Quality. Field inspection.

Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION

SECTION 08110
STEEL DOORS AND FRAMES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of contract including General and Supplementary Conditions and Division-1 Specification sections apply to work of this section.

DESCRIPTION OF WORK:

Extent of steel doors and frames is indicated and scheduled on drawings.

QUALITY ASSURANCE:

Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.

Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows", and have been tested, listed, and labeled in accordance with ASTM E 152 "Standard Methods of Fire Tests of Door Assemblies" by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.

SUBMITTALS:

Product Data: Submit manufacturer's technical product data substantiating that products comply with requirements.

Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.

Indicate coordinate of glazing frames and stops with glass and glazing requirements.

DELIVERY, STORAGE, AND HANDLING:

Deliver hollow metal work cartoned or crated to provide protection during transit and job storage.

Inspect hollow metal upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

Store doors and frames at building site under cover. Place units on minimum 4" high wood blocking. Avoid use of non-vented placed plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4" spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

MATERIALS:

Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.

Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ATM 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.

Supports and Anchors: Fabricate of not less than 18-gage galvanized sheet steel.

Inserts, Bolts, and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.

Shop Applied Paint: NA

Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

FABRICATION, GENERAL:

Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant.

Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at project site.

Fabricate exposed faces of doors and panels, from only cold-rolled steel.

Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from

either cold-rolled or hot-rolled steel (at fabricator's option).

Fabricate exterior doors, panels, and frames from galvanized sheet steel. Close top and bottom edges of exterior doors as integral part of door construction or by addition of minimum 16-gage inverted steel channels.

Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

Thermal-Rated (Insulating) Assemblies:

At exterior locations, provide doors which have been fabricated as thermal insulating door and frame assemblies and tested in accordance with ASTM C 236.

Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for door and frame preparation for hardware.

Locate finish hardware as indicated on final shop drawings, or if not indicated, in accordance with "Recommended Locations for Builder's Hardware", published by Door and Hardware Institute.

Shop Painting:

Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.

Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before application of paint.

Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

STANDARD STEEL DOORS:

Provide metal doors of types and styles indicated on drawings and schedules.

Form door face sheets of 16-gage metal.

Stiffener: Stiffen face sheet with continuous vertical formed steel sections over full thickness of interior space between door faces.

Join door faces at vertical edges by continuous weld extending full height of door.

Close top and bottom edges of doors with steel channel minimum of 16-gage extending full width of door, and spot welded to both faces.

STANDARD STEEL FRAMES:

Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16-gage cold-rolled furniture steel.

Fabricate frames with mitered corners knocked down, for field assembly for interior applications and with mitered corners, welded construction for exterior applications; and as otherwise specifically noted.

Form exterior frames of hot-dip galvanized steel.

Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.

Plaster Guards: Provide 26-gage steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

PART 3 - EXECUTION

INSTALLATION:

General: Install standard steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.

Placing frames: Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames" unless otherwise indicated.

In masonry construction, locate 3 wall anchors per jamb at hinge and strike levels.

Install fire-rated frames in accordance with NFPA Standard No. 80.

In stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels.

Coordinate frame heights with final level of lightweight concrete.

Door Installation:

Fit hollow metal doors accurately in frames within clearance specified in SDI-100.

Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

ADJUST AND CLEAN:

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.

END OF SECTION

SECTION 08210 WOOD DOORS

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent and location of each type of wood door is shown on drawings and in schedules.

Types of doors required include the following:

Solid core flush wood doors with veneer faces.

Shop priming of wood doors is included in this section.

QUALITY ASSURANCE:

Fire-Rated Wood Doors: Provide wood doors with fire-resistance ratings indicated or required to comply with governing regulations and which are identical in materials and type of construction to those used in assemblies which have been tested in compliance with ASTM E 152 and are labeled and listed by a testing and inspection organization acceptable to authority having jurisdiction.

Manufacturer: Obtain doors from a single manufacturer to ensure uniformity in quality of appearance and construction.

REFERENCES:

Comply with the applicable requirements of the following standards unless otherwise indicated:

ANSI/NWMA I.S. 1: "Industry Standard for Wood Flush Doors" published by National Woodwork Manufacturers Association (NWMA).

SUBMITTALS:

Product Data: Submit door manufacturer's product data, specifications and installation instructions for each type of wood door.

Include details of core and edge construction, trim for openings and louvers (if any) and similar components.

Samples: Submit samples for the following:

Transparent Finished Doors: Submit sample of veneer sheet to be used for face veneers.

Specific Product 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 show telegraphing of core construction below in face veneers, or do not conform to tolerance limitations of NWMA and AWI.

Warranty shall be in effect during following period of time after date of substantial completion.

Solid Core Flush Interior Doors:

Manufacturer's standard warranty.

PRODUCT DELIVERY, STORAGE AND HANDLING:

Protect wood doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with the "On-site Core" recommendations of NWMA pamphlet "Care and Finishing of Wood Doors" and with manufacturer's instructions, and as otherwise indicated.

Package doors at factory prior to shipping using manufacturer's standard method indicated.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURER:

Manufacturer: Subject to compliance with requirements provide products of one of the following:

Mohawk Doors, Inc.
Weyerhaeuser Company
Eggers Hardwood Products Corp.

MATERIAL AND COMPONENTS:

General: Provide wood doors complying with applicable requirements of referenced standards 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 and stiles and rails, unless otherwise indicated.

INTERIOR FLUSH WOOD DOORS:

Solid Core Doors for Transparent Finish:

Faces: Natural Birch, rotary sliced

Grade: Premium

Core Construction: Particle board core.

Fire-Rated Solid Core Doors:

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.

SHOP PRIMING:

Before delivery of doors to project site, shop-prime as follows:

Transparent Finish: Prime doors shown as scheduled for transparent finish with required pre-treatments and first coat of finish as specified in Division-9 "Painting" sections of these specifications.

PART 3 - EXECUTION

INSPECTION:

Installer must examine door frame and verify that frames are correct type and have been installed as required for proper hanging of corresponding doors and notify Contractor in writing of conditions detrimental to proper and timely installation of wood doors. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

INSTALLATION:

Condition doors to average prevailing humidity in installation area prior to hanging.

Hardware: For installation see Division-8 "Builders 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.

Job Fit Doors: Align doors to frame for proper fit and uniform clearance at each edge and machine for hardware. Seal cut surfaces after fitting and machining.

Bevel non-rated doors 1/8" in 2" at lock and hinge edges.

Bevel fire-rated doors 1/8 in 2" lock edge.

Job Site Finished Doors: See painting sections in Division-9 of these specifications for requirements for finishing wood doors.

ADJUST AND CLEAN:

Operation: Rehang 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.

Protection and Completed Work: Advise Contractor of proper procedures required for protection of installed wood doors from damage or deterioration until acceptance of work.

END OF SECTION

**SECTION 08331
OVERHEAD COILING DOORS**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of overhead coiling (fire rated) doors is shown on drawings.

Provide complete operating door assemblies including door curtains, guides, counterbalance mechanism, hardware, and installation accessories.

QUALITY ASSURANCE:

Furnish each rolling door as a complete unit produced by one manufacturer, including hardware, accessories, mounting and installation components.

Unless otherwise acceptable to Architect, furnish overhead coiling door units by one manufacturer for entire project.

SUBMITTALS:

Product Data: Submit manufacturer's product data, roughing-in diagrams, and installation instructions for each type and size of rolling counter door. Include operating instructions and maintenance information.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Atlas Door Corporation
The Cookson Company
Overhead Door Corporation

DOOR CURTAIN MATERIALS AND CONSTRUCTION:

Door Curtain: Fabricate overhead coiling door curtain of interlocking slats designed to withstand required wind loading, of continuous length for width of door without splices. Unless otherwise indicated, provide slats of material gage recommended by door manufacturer for size and type of door required, and as follows.

Rolling Counter Fire Door:

Curtain: 22-gage galvanized steel, flat face slat, bottom bar of two steel angles with astragal and end locks.

Fire Door Classification: Class B 1-1/2 hour rating

Counterbalance: Helical torsion springs enclosed in a barrel.

Operation: Motorized Push Up

Automatic Closing: Automatic closing device and governor with 160 degree fusible link.

Guide: Fabricated from steel angles.

Locking Device: Bottom bar of curtain shall be furnished with concealed slide bolt deadlock.

Hood: 24-gage galvanized steel.

Finish: Curtain and hood shall have a baked prime coat.

Mounting: Inside of wall opening width.

PART 3 - EXECUTION**INSTALLATION:**

Install door and operating equipment complete with necessary hardware, jamb and head mold strips, anchors, inserts, hangers, and equipment supports in accordance with final shop drawings, manufacturer's instructions, and as specified herein.

Install fire-rated doors to comply with NFPA 80.

Upon completion of installation including work by other trades, lubricate, test and adjust doors to operate easily, free from warp, twist of distortion and fitting weather tight for entire perimeter.

END OF SECTION

SECTION 08410
ALUMINUM ENTRANCES, WINDOWS & STORE FRONTS

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of aluminum entrances and storefronts is indicated on drawings.

Types of aluminum entrances and storefronts required include the following:

- Exterior entrance doors
- Storefront type framing system
- Window fixed framing system

QUALITY ASSURANCE:

Drawings: Plans, elevations and details show spacings of members as well as profile and similar dimensional requirements of aluminum entrances, windows and storefront work. Minor deviations will be accepted in order to utilize manufacturer's standard products when, in Architect's sole judgement, such deviations do not materially detract from design concept or intended performances.

Drawings are based on one manufacturer's standard aluminum entrance, windows and storefront system. Another standard system of a similar and equivalent nature will be acceptable when differences do not materially detract from design concept or intended performances, as judged solely by Architect.

SUBMITTALS:

Product Data: Submit manufacturer's specifications, standard details, and installation recommendations for components of aluminum entrances, windows and storefronts required for project, including test reports certifying that products have been tested and comply with performance requirements.

Shop Drawings: Submit shop drawings for fabrication and installation of aluminum entrances, windows and storefronts, including elevations, detail sections of typical composite members, hardware mounting heights, anchorages, reinforcement, expansion provisions, and glazing.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Kawneer Company, Inc.
PPG Industries, Inc.
Tubelite Division, Indal, Inc.

MATERIALS AND ACCESSORIES:

Aluminum Members: Alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate.

Fasteners: Aluminum, non-magnetic stainless steel, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum components.

Do not use exposed fasteners except where unavoidable for application of hardware. Match finish of adjoining metal.

Provide Phillips flat-head machine screws for exposed fasteners.

Concealed Flashing: Dead-soft, stainless steel, 26 gage minimum, or extruded aluminum, 0.062" minimum, of an alloy and type selected by manufacturer for compatibility with other components.

Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible; otherwise, non-magnetic stainless steel or hot-dip galvanized steel complying with ASTM A 386.

Bituminous Coatings: Cold-applied asphalt mastic complying with SSPC-PS 12, compounded for 30-mil thickness per coat.

Compression Weatherstripping: Manufacturer's standard replaceable stripping of either molded neoprene gaskets complying with ASTM D 2000 or molded PVC gaskets complying with ASTM D 2287.

Sliding Weatherstripping: Manufacturer's standard replaceable stripping of wool, polypropylene, or nylon woven pile, with nylon fabric or aluminum strip backing, complying with AAMA 701.2.

Glass and Glazing Materials: Provide glass and glazing materials which comply with requirements of "Glass and Glazing" section of these specifications.

WINDOW AND STORE FRONT FRAMING SYSTEM:

General: Provide Kawneer Tri-Fab 450 and 451 or equal framing system with provisions for glass replacement. Shop-fabricate and preassemble frame components where possible.

STILE-AND-RAIL TYPE ALUMINUM DOORS:

Frame: Provide tubular frame members, fabricated with mechanical joints using heavy inserted reinforcing plates and concealed tie-rods or j-bolts, or fabricate with structurally welded joints, at manufacturer's option. Door shall be equal to Kawneer Wide Stile 550 series.

Glazing: Fabricate doors to facilitate replacement of glass or panels, without disassembly of door stiles and rails. Provide snap-on extruded aluminum glazing stops, with exterior stops anchored for non-removal. Glazing shall be 1" laminated spandrel safety glass.

FINISHES:

Anodized Aluminum Finishes:

Class 1 Color Anodized Finish: AA-M12C22A42/A44 (non-specular as fabricated mechanical finish; chemical etch, medium matte; 0.7 mil min. thick integrally or electrolytically deposited colored anodic coating).

Color: Black

HARDWARE

Provide 2 pair 4 ½ x 4 ½ stainless steel ball bearing hinges, aluminum threshold, weather stripping, panic device with keyed exterior lock, and LCN 4041 closer.

PART 3 - EXECUTION**PREPARATION:**

Field Measurement: Wherever possible, take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting of work.

INSTALLATION:

Comply with manufacturer's instructions and recommendations for installation of aluminum entrances and storefronts.

Set units plumb, level, and true to line, without warp or rack of framing members, doors, or panels. Anchor securely in place, separating aluminum and other corrodible metal surfaces from sources of corrosion of electrolytic action at points of contact with other materials.

Drill and tap frames and doors and apply surface-mounted hardware items, complying with hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.

Set sill members and other members in bed of sealant to provide weather tight construction.

ADJUST AND CLEAN:

Adjust operating hardware to function properly, without binding, and to prevent tight fit at contact points and weatherstripping.

Clean completed system, inside and out, promptly after erection and installation of glass and sealants. Remove excess glazing and joint sealants, dirt, and other substances from aluminum surfaces.

Institute protective measures and other precautions required to assure that aluminum entrances and storefronts will be without damage or deterioration, other than normal weathering, at time of acceptance.

END OF SECTION

**SECTION 08610
WOOD WINDOWS**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Standards: Comply with ANSI/NWMA "Industry Standard for Wood Window Units I.S. 2-80" by National Manufacturers Association (NWMA), except to extent more stringent requirements are indicated.

Submittals: Submit manufacturer's data, including quarter-size details of each typical section; and submit information on hardware, weatherstripping and pre-glazed construction (if any).

PART 2 - PRODUCTS

MATERIALS/FABRICATION:

Manufacturer: Provide clad wood window units produced by the following; or approved equal.

Rolscreen Company; Pella, IA
Anderson Corp., Bayport, MN

Types (Operation): Operating and fixed sash of the following types of wood window units shall be furnished.

Casement units (Swing out); with roto-type operator for swing-out units, cam latch and lever, non-friction extension hinges for swing-out units. See Floor Plan for location of operable windows.

Fixed units (without operating sash).

Classification (Grade): Manufacturer's standard.

Weatherstripping: Except as otherwise indicated, provide concealed, non-ferrous spring-metal or vinyl-gasket type, applied to each edge of each operable sash.

Pre-glaze units, except do not preglaze light sizes in excess of 100 unities inches, unless specifically recommended by manufacturer. Provide either wood stops, or "groove-glazed" system (non-

removable stops) glazed during assembly of sash rails. Except as otherwise indicated, pre-glaze wood window units with clear 1" nominal insulating glass units; fabricated of float or sheet glass.

Cladding: Manufacturer's standard sheath with white integral or baked-on acrylic coating applied to exterior-exposed surfaces of window units.

Insect Screens: Manufacturer's standard removable units, for each operable sash, of extruded aluminum or formed aluminum or steel framing.

Hardware: Manufacturer's standard design.

Trim: Provide interior casing, sill and nosing integral mullions, exterior mullion covers, water shed trim sill flashing and similar items of trim for each unit or group of units.

PART 3 - EXECUTION

INSTALLATION/ERECTION:

Anchor window units securely in place. Seal entire perimeter of each unit; comply with applicable requirements of "Joint Sealers" section. Adjust operating sash for proper operation and closure, and lubricate hardware. Clean surfaces in preparation for final finish application. Clean glass promptly after installation.

END OF SECTION

**SECTION 08710
FINISH HARDWARE**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Definition: "Finish Hardware" includes items known commercially as finish hardware which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame.

Extent of finish hardware required is indicated in the schedule at the end of this section.

Types of finish hardware required include the following:

- Hinges
- Pivots
- Lock cylinders and keys
- Bolts
- Exit devices
- Push/pull units
- Closers
- Weatherstripping for doors
- Thresholds
- Holder/Stops/Bumpers

Silencers included integral with hollow metal frames are specified with door frames elsewhere in Division-8.

QUALITY ASSURANCE:

Manufacturer: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.

Supplier: A recognized architectural finish hardware supplier with warehousing facilities who has been furnishing hardware in the project's vicinity for a period of not less than 2 years, and who is, or who employs an experienced architectural hardware consultant who is available, at

reasonable times during the course of the work, for consultation about project's hardware requirements to Owner, Architect and Contractor.

Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM for types and sizes of doors required and complies with requirements of door and door frames labels.

SUBMITTALS:

Product Data: Submit manufacturer's technical product data for each item of hardware in accordance with Division-1 section "Submittals". Include whatever information may be necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish.

Hardware Schedule: Submit final hardware schedule in manner indicated below. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware.

Final Hardware Schedule Content: Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:

- Type, style, function, size and finish of each hardware item.
- Name and manufacturer of each item.
- Fastenings and other pertinent information.
- Location of hardware set cross-referenced to indications on drawings both on floor plans and in door and frame schedule.
- Explanation of all abbreviations, symbols, codes, etc. contained in schedule.
- Mounting locations for hardware.
- Door and frame sizes and materials.

Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to the coordinated review of hardware schedule.

Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

Samples: Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample of each type of exposed hardware unit, finished as required and tagged with full description for coordination with schedule.

Samples will be returned to the supplier. Units, which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.

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 shop drawings of such other work to confirm that adequate provisions are made for proper location and installation of hardware.

PRODUCT HANDLING:

Tag each item or package separately, with identification related to final hardware schedule, and include basic installation instructions with each item or package.

Packaging of hardware, is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.

Inventory hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

Provide secure lock-up for hardware delivered to the project but not yet installed. Control handling and installation of hardware items which are not immediately replaceable so that completion of the work will not be delayed by hardware losses, both before and after installation.

PART 2 - PRODUCTS

SCHEDULED HARDWARE:

Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in the Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of the following:

Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required. Provide either the product designated, or, where more than one manufacturer is listed, the comparable product of one of the other manufacturers which comply with requirements including those specified elsewhere in this section.

Acceptable Manufacturers:

Hinges: Stanley, McKinney, Lawrence
Pivots: Rixon-Firemark, Stanley, Lawrence
Locksets: Sargent, Schlage, Corbin, Adams Rite
Bolts: Stanley, Lawrence
Push/Pulls: Brookline, Hiawatha, Blumcraft
Closers: LCN, Sargent
Weatherstripping: Reese, Zero
Thresholds: Reese, Zero
Exit Devices: Corbin, Sargent, Von Duprin
Holders/Stops/Bumpers: HEWI, H.B. Ives Co., Baldwin

MATERIALS AND FABRICATION:

General:

Hand of door: Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.

Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to Architect.

Manufacturer's identification will be permitted on rim of lock cylinders only.

Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.

Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each

thru-bolt or use sex screw fasteners.

Tools and Maintenance Instructions for Maintenance: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

HINGES, BUTTS AND PIVOTS:

Templates: Provide only template-produced units.

Screws: Furnish Phillips flat-head or machine screws for installation of units, except furnish Phillips flat-head or wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.

Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

Steel Hinges: Steel pins

Non-ferrous Hinges: Stainless steel pins

Exterior Doors: Non-removable pins

Interior Doors: Non-rising pins

Tips: Flat button and matching plug, finished to match leaves.

Number of hinges: Provide number of hinges indicated.

LOCK CYLINDERS AND KEYING:

General: Supplier will meet with Owner to finalize keying requirements and obtain final instructions in writing.

Standard System: Except as otherwise indicated, provide new master key system for project.

Equip locks with manufacturer's standard 6-pin tumbler cylinders.

Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.

Key Material: Provide keys of nickel silver only.

Key Quantity: Furnish 3 change keys for each lock; 5 master keys for each master system; and 5 grandmaster keys for each grandmaster system.

Deliver keys to Owner's representative.

Provide complete cross index system set up by key control manufacturer and place keys on markers and hooks in a cabinet as determined by the final key schedule.

Provide hinged-panel type cabinet, for wall mounting.

LOCKS, LATCHES AND BOLTS:

Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set.

PULL/PUSH UNITS:

Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation; through-bolted for back to back pulls only.

CLOSERS AND DOOR CONTROL DEVICES:

Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit, depending upon size of door, exposure to weather and anticipated frequency of use.

Where parallel arms are indicated for closers, provide closer unit one size larger than recommended for use with standard arms.

WEATHERSTRIPPING:

General: Except as otherwise indicated, provide continuous weatherstripping at each edge of every exterior door leaf. Provide type, sizes and profiles shown or scheduled. Provide non-corrosive fasteners as recommended by manufacturer for application indicated.

Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.

THRESHOLDS:

General: Except as otherwise indicated provide standard metal threshold unit of type, size and profile as scheduled.

HARDWARE FINISHES:

Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and texture as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening. In general, match items to the

manufacturer's standard finish for the latch and lock set (or push/pull units if no latch-lock sets) for color and texture.

Provide quality of finish, including thickness of plating or coating (if any), composition, hardness and other qualities complying with manufacturer's standards, but in no case less than specified for the applicable units of hardware by referenced standards.

The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI A156.18 "Materials & Finishes Standard", including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

PART 3 - EXECUTION

INSTALLATION:

Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Architect.

Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division-9 sections. Do not install surface-mounted items until finishes have been completed on the substrate.

Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant.

ADJUST AND CLEAN:

Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

Clean adjacent surfaces soiled by hardware installation.

Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance

or occupancy, and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

END OF SECTION

**SECTION 08800
GLASS AND GLAZING**

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-3 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Definitions: "Glass" includes both primary and fabricated glass products as described in FGMA "Glazing Manual". "Glazing" includes glass installation and materials used to install glass.

Extent of glass and glazing work is indicated on drawings.

Types of work in this section include glass and glazing for:

- Window units
- Entrances and other doors
- Store Front Systems

SYSTEM PERFORMANCES:

Provide glass and glazing that has been produced, fabricated and installed to withstand normal temperature changes, wind loading, without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials, and other defects in the work.

QUALITY ASSURANCE:

Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated.

Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.

Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.

SUBMITTALS:

Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.

DELIVERY, STORAGE, AND HANDLING:

Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

PROJECT CONDITIONS:

Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes. Install glazing sealants only when temperatures are in middle third of manufacturer's recommended installation temperature range.

PART 2 - PRODUCTS**GLASS PRODUCTS, GENERAL:**

Primary Glass Standard: Provide primary glass which complies with FS DD-G-451 requirements, including those indicated by reference to type, class, quality, and form.

Heat-Treated Glass Standard: Provide heat-treated glass which complies with FS DD-G-1403 requirements, including those indicated by reference to grade, style, type, quality, and class.

Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

PRIMARY GLASS PRODUCTS:

Clean Float Glass: Glazing quality clear float glass, double strength. Meets Federal Specification DD-G-451D.

HEAT-TREATED GLASS PRODUCTS:

Clear Tempered Float Glass: Grade B (fully tempered), style I (uncoated surfaces), type I (float), quality q3 (glazing quality), class 1 (transparent). Free of tong marks.

SEALED INSULATING GLASS UNITS:

General: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space; comply with requirements indicated for glass characteristics, air space, sealing system, sealant, spacer material, corner design, and desiccant.

Provide heat-treated panes of grade and at locations indicated or, if not indicated, provided heat-strengthened panes where recommended by manufacturer for application indicated and tempered where indicated or where safety glass is designated or required.

Thickness of Each Pane: 1/4".

Air Space Thickness: 1/2".

Sealing System: Dual seal; primary and secondary sealant; manufacturer's standard materials.

Spacer Material: Aluminum.

Desiccant: Manufacturer's standard material.

Corner Design: Die cast key.

GLAZING SEALANTS:

General: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants which have performance characteristics suitable for applications indicated and conditions at time of installation.

Compatibility: Select sealants with proven compatibility with surfaces contacted in the installation and under service conditions indicated as demonstrated by testing and field experience.

Colors: Provide color of exposed sealants indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

Acrylic Glazing Sealant: Acrylic terpolymer or polypropenatate solvent-based thermo-plastic 1-part sealant complying with FS TT-S-00230, Class B, Type II; and with ASTM C 920, Type S, Grade NS, Class 12-1/2, Use G and, as applicable to use indicated, Uses A and O.

Preformed Butyl-Polyisobutylene Glazing Tape: Blend of butyl-polyisobutylene rubber with a solids content of 100%, in extruded tape form, complying with AAMA 807.1, packaged on rolls with a release paper on side, with or without continuous spacer rod as recommended by manufacturer's of tapes and glass for application indicated.

GLAZING GASKETS:

Lock-Strip Gaskets: Neoprene extrusions of size and shape indicated, fabricated into frames with molded corner units and zipper lock strips, complying with ASTM C 542; black.

MISCELLANEOUS GLAZING MATERIALS:

Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation.

Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

Setting Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.

Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.

Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.

PART 3 - EXECUTION

INSPECTION:

Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

PREPARATION:

Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

GLAZING, GENERAL:

Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from imperfections of kind that, when installed, weakens glass and impairs performance and appearance.

Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

GLAZING:

Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but no closer than 6", unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches, except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

Tool exposed surfaces of sealants to provide a substantial "wash" way from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement.

Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

PROTECTION AND CLEANING:

Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove non-permanent labels and clean surfaces.

Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by methods recommended by glass manufacturer.

Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion. Wash glass by method recommended by glass manufacturer.

END OF SECTION

**SECTION 09250
GYPSUM DRYWALL**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Types of work include:

Gypsum drywall including screw-type metal furring support system.

Gypsum drywall directly applied to wood framing and furring.

Drywall finishing (joint tape-and-compound treatment).

QUALITY ASSURANCE:

Fire-Resistance Ratings: Where gypsum drywall systems with fire-resistance ratings are indicated, provide materials and installations which are identical with those of applicable assemblies tested per ASTM E 119 by fire testing laboratories acceptable to authorities having jurisdiction.

Gypsum Board Terminology Standard: GA-505 by Gypsum Association.

Single-Source Responsibility: Obtain gypsum board products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.

SUBMITTALS:

Product Data: Submit manufacturer's product specifications and installation instructions for each gypsum drywall component, including other data as may be required to show compliance with these specifications.

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 in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.

Neatly stack gypsum boards flat to prevent sagging.

Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal corner beads and trim from being bent or damaged.

PROJECT CONDITIONS:

Environmental Requirements, General: Comply with requirements of referenced gypsum board application standards and recommendations of gypsum board manufacturer, for environmental conditions before, during, and after application of gypsum board.

Cold Weather Protection: When ambient outdoor temperatures are below 55 degrees F maintain continuous, uniform, comfortable building working temperatures of not less than 55 degrees F for a minimum period of 48 hours prior to, during, and following application of gypsum board and joint treatment materials or bonding of adhesives.

Ventilation: Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too rapid drying.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Gypsum Board and Related Products:

Flintkote Products, Genstar Building Materials Co.
Gold Bond Building Products Div., National Gypsum Company
United States Gypsum Company

GYPSUM BOARD:

Gypsum Wallboard: ASTM C 36, of types, edge configuration and thickness indicated below; in maximum lengths available to minimize end-to-end butt joints.

Type: Type X unless otherwise indicated.

Edges: Tapered and featured (rounded or beveled) for pre-filling.

Thickness: 5/8" unless otherwise indicated.

Exterior Gypsum Board: ASTM C 931, of type, edge configuration and thickness indicated below; in maximum lengths available to minimize end-to-end joints.

Type: Type X unless otherwise indicated.

Edges: Manufacturer's standard.

Thickness: 5/8" unless otherwise indicated.

Water-Resistant Backing Board: ASTM C 630, with tapered edges and of type and thickness indicated below; in maximum lengths available to minimize end-to-end butt joints.

Type: Regular, unless otherwise indicated.

Thickness: 5/8" unless otherwise indicated.

Install to 48" above floor around all toilet, lavatory, and janitor closet areas.

TRIM ACCESSORIES:

General: Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of galvanized steel unless otherwise indicated, with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim-beads, U-type edge trim-beads, and one-piece control joint beads.

Exterior Trim: Provide zinc-alloy units, except as otherwise indicated.

JOINT TREATMENT MATERIALS:

General: ASTM C 475, type recommended by the manufacturer for the application indicated, except as otherwise indicated.

Joint Tape: Paper reinforcing tape.

Joint Compound: Ready-mixed vinyl-type for interior use.

Grade: 2 separate grades; one specifically for bedding tapes and filling depressions, and one for topping and sanding.

Joint Compound: On interior work provide chemical-hardening-type for bedding and pre-filling, such as "Dura-bond" 90.

Water-Resistant Joint Compound: Special water-resistant type for treatment of joints, fastener heads and cut edges of water-resistant backing board.

Product: Subject to compliance with requirements, provide Sheetrock Brand W/R Compound;

United States Gypsum Company.

MISCELLANEOUS MATERIALS:

General: Provide auxiliary materials for gypsum drywall work of the type and grade recommended by the manufacturer of the gypsum board.

Laminating Adhesive: Special adhesive or joint compound specifically recommended for laminating gypsum boards.

Gypsum Board Screws: Comply with ASTM C 646.

Concealed Acoustical Sealant: Non-drying, non-hardening, non-skinning, non-staining, non-bleeding, gummable sealant for concealed applications per ASTM C 919. See Section 07900.

Sound Attenuation Blankets: FS HH-I-521, Type I, semi-rigid mineral fiber blanket without membrane, Class 25 flame-spread, thicknesses as indicated. As manufactured by U.S.G. or approved equal, 3" minimum thickness. STC rating with wall assembly as shown: 46-49. Install in all sound partitions as indicated on Drawings.

PART 3 - EXECUTION

WALL/PARTITION SUPPORT SYSTEMS:

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 work to comply with details indicated or if not otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer, or if not available, of "Gypsum Construction Handbook" published by United States Gypsum Company.

Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.

Extend partition stud system through acoustical ceilings and elsewhere as indicated to the structural support and substrate above the ceiling.

Space studs 24" o.c., unless otherwise indicated.

Frame door openings to comply with details indicated or if not otherwise indicated, to comply with "Gypsum Construction Handbook" published by United States Gypsum Company. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for jack studs) at head and secure to jamb studs.

Frame openings other than door openings to comply with details indicated or if not indicated, in

same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS:

Gypsum Board Application and Finishing Standards: ASTM C 840 and GA 216.

Install sound attenuation blankets as indicated, prior to gypsum board unless readily installed after board has been installed.

Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.

Install ceiling boards in the direction and manner which will minimize the number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints at least 1'-0".

Install wall/partition boards vertically to avoid end-butt joints wherever possible.

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" open space between boards. Do not force into place.

Locate either edge or end joints over supports, except in horizontal applications or 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 sides of partitions.

Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.

Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4" to 1/2" space and trim edge with U-type semi-finishing edge trim. Seal joint with acoustical sealant.

Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

METHODS OF GYPSUM DRYWALL APPLICATION:

Single-Layer Application: Install gypsum wallboard:

On ceilings apply gypsum board prior to wall/partition board application to the greatest extent possible.

On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

On ceilings to receive glued acoustical tile, one taping application is required, with no finishing.

Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install gypsum backing board.

In toilet, shower rooms and similar "wet" areas, install water-resistant backing board. Apply with un-cut long edge at bottom of work. Seal ends, cut-edges and penetrations of each piece with water-resistant adhesive or, where recommended by backing board manufacturer, with water-resistant joint compound.

Double-Layer Application: Install gypsum backing board for base layer and exposed gypsum board for face layer.

Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:

Fasten with both screws and glue.

INSTALLATION OF DRYWALL TRIM ACCESSORIES:

General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.

Install metal corner beads at external corners of drywall work.

Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound. Install L-type trim where work is tightly abutted to other work. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

FINISHING OF DRYWALL:

General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Pre-fill open joints and rounded or beveled edges, using "Dura-bond" 90 compound.

Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.

Apply joint compound in 3 coats (not including pre-fill of openings in base), and sand between last 2 coats and after last coat.

Water-Resistant Gypsum Board Base for Ceramic Tile: Treat joints and fasteners to comply with directions of water-resistant joint compound manufacturer.

In areas to be tiled, treat fastener heads with water-resistant joint compound. Fill tapered edges in gypsum panels with water-resistant joint compound, embed joint tape firmly and wipe off excess compound; follow immediately with a second coat of water-resistant joint compound over taping coat, being careful not to crown the joint. Fold and embed tape in all interior angles to form true angles.

In areas not to be tiled, treat fastener heads and embed tape as indicated above using water-resistant joint compound but finish with 2 coats of joint compound used for regular gypsum board work.

Refer to sections on painting, coatings and wall coverings in Division-9 for decorative finishes to be applied to drywall work.

Finish drywall with lighting conditions matching final conditions, especially in areas around recessed lighting fixtures receiving glancing light coverage.

PROTECTION OF WORK:

Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall work being without damage or deterioration at time of substantial completion.

END OF SECTION

SECTION 09510
ACOUSTICAL CEILINGS

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent: Provide all acoustical ceiling tile, grid system and accessories, complete in place, as shown on the Room Finish Schedule, specified herein, and needed for a complete and proper installation.

Related Work: The following is part of the Work specified in other Sections of the Specifications.

Light fixtures.
Ceiling diffusers.

QUALITY ASSURANCE:

Fire Performance Characteristics: Provide acoustical ceiling components that are identical to those tested for the following fire performance characteristics, according to ASTM test method indicated, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate marking of applicable testing and inspecting agency.

Surface Burning Characteristics: As follows, tested per ASTM E 84.

Flame Spread: 25 or less.
Smoke Developed: 50 or less.

Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other supported by or penetrating through, ceilings, including light fixtures, and HVAC equipment system components.

SUBMITTALS:

Samples: Submit samples, manufacturer's specifications of all acoustical units, all suspension systems and accessories.

DELIVERY, STORAGE, AND HANDLING:

Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.

Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content for 24 hours prior to installation.

Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

PROJECT CONDITIONS:

Space Enclosure: Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy. (60 degrees F to 85 degrees F with maximum RH of 80%)

PART 2 - PRODUCTS**MATERIALS:**

Lay-in Acoustic Tile: Second Look II, as manufactured by "Armstrong", 24" x 48" x 5/8", Tegular edge, #816A, for installation with an exposed grid suspension system.

NRC: .55

STC: .35 - .39

Ceiling Suspension System: "Chicago Metallic Corporation", Series 500 snap grid or approved equal.

PART 3 - EXECUTION**PREPARATION:**

Measure each ceiling area and established layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders.

INSTALLATION:

General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, and industry standards applicable to work.

Arrange acoustical units and orient directionally-patterned units in north/south direction.

Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers not less than 6" from each end and spaced 4'-0" along each direct hung runner, unless otherwise indicated, leveling to tolerance of 1/8" in 12'-0". Secure wire hangers, #12 gauge, galvanized, soft-annealed, mild steel wire 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 hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structural or ceiling suspension systems. Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing, countersplaying or other equally effective means.

Install edge moldings at perimeter of acoustical ceiling area at penetrations and at locations where necessary to conceal edges of acoustical units. Cope tee end bottom flanges at molding intersection so that bottom flanges are flush in same plane.

Coordinate installation of hangers and channels with mechanical and electrical work.

Refer to Drawings for location of recessed lights, diffusers, and other openings in ceiling.

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. Care shall be taken to prevent damage to or soiling of tiles during installation and any such damage shall be repaired to satisfaction of the Owner's Representative.

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.

EXTRA STOCK:

Deliver stock of maintenance material to Owner. Furnish maintenance material matching products installed, packaged with protective covering for storage and identified with appropriate labels.

Acoustical Ceiling Units: Furnish quantity of full size units equal to one full box of each type of panels installed.

END OF SECTION

SECTION 09680
CARPETING

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of each type of carpeting is indicated on finish schedule and by specifications, and is defined to include carpet, cushion and accessories. Each type of required carpet is specified by data sheets, included as last pages of this section.

QUALITY ASSURANCE:

General Terminology/Information Standard: Refer to current edition of "Carpet Specifier's Handbook" by The Carpet and Rug Institute; for definitions of terminology not otherwise defined herein, and for general recommendations and information.

Flame/Smoke Resistance Standards: Where ratings are indicated for carpet, provide materials complying with ratings as indicated for the following test standards:

Floor Radiant Panel Test: Test for burning under varying radiant energy levels; ASTM E 648, with minimum average radiant flux ratings not less than the following:

FRPT Rating: 0.45 watts/square cm.

Smoke Density Test: Test in radiant heat chamber, with and without flame, for density of smoke generated; ASTM E 662, or NFPA No. 258, also known as NBS Smoke Density Chamber Test.

Static Resistance: Provide yarn or yarn blend as indicated in carpet construction, and include provisions to comply with static resistance ratings as indicated, either by selection of yarns known to be effective or by inclusion of small percentages of special anti-static yarn known to be effective in achieving indicated static resistance. Where rating is not otherwise indicated, provide 20 KV resistance for 20% R.H. at 70 degrees F. AATCC 134.

SUBMITTALS:

Product Data: Submit manufacturer's complete technical product data for each type of carpet,

cushion and accessory item required.

Samples: Submit 24" x 24" samples of each carpet required.

Certification: Submit manufacturer's certification stating that carpet materials furnished comply with specified requirements. Include supporting certified laboratory test data indicating that carpet meets or exceeds specified test requirements.

Maintenance Data: Submit manufacturer's printed maintenance recommendations, including methods and frequency recommended for maintaining carpet in optimum conditions under anticipated traffic and use conditions.

PRODUCT DELIVERY AND STORAGE:

Deliver carpeting materials in original mill protective wrapping with mill register numbers and tags attached. Store inside in well ventilated area, protected from weather, moisture and soiling.

PART 2 - PRODUCTS

CARPET:

Data Sheets/Schedule: Detailed carpet construction and performance requirements for each required type of carpet are specified by carpet data sheet at end of this section.

Carpet Color, Pattern, Texture: See drawings.

General: Unless otherwise indicated on data sheets, match Architect's sample(s) or match manufacturer's stock carpet(s) as designated for control/selection of color, pattern and texture.

CARPET ACCESSORIES:

Carpet Edge Guard, Non-metallic: Extruded or molded heavy-duty vinyl edge guard; colors selected by Architect from among standard colors available within the industry.

Installation Adhesive: Water-resistant, non-staining type as recommended by carpet manufacturer, and which complies with flammability requirements for installed carpet.

Seaming Cement: Hot-melt seaming adhesive or similar product recommended by carpet manufacturer, for taping seams and buttering cut edges at backing to form secure seams and prevent pile loss at seams.

Miscellaneous Materials: As recommended by manufacturers of carpet, cushions and other carpeting products; and selected by Installer to meet project circumstance and requirements.

PART 3 - EXECUTION

PRE-INSTALLATION REQUIREMENTS:

Examine substrates for moisture content and other conditions under which carpeting is to be installed. Repair minor holes, cracks, depressions or rough areas using material recommended by carpet or adhesive manufacturer. Notify Contractor in writing of major conditions detrimental to proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

Clear away debris and scrape up cementitious deposits from surfaces to receive carpeting; vacuum clean immediately before installation. Check concrete surfaces to ensure no "dusting" through installed carpet; apply sealer where required to prevent dusting.

Sequence carpeting with other work so as to minimize possibility of damage and soiling of carpet during remainder of construction period.

INSTALLATION:

General:

Comply with manufacturer's instructions and recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doors, center seams under doors; do not place seams in traffic direction at doorways. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and closets of each space. Provide cut-outs where required, and bind cut edges properly where not concealed by protective edge guards or overlapping flanges. Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate. Install latex floor leveling compound where carpet abuts other flooring materials as required to bring floor finishes to same elevation.

Glue-Down Installation:

Fit sections of carpet into each space prior to application of adhesive. Trim edges and butter cuts with seaming cement. Apply adhesive uniformly to substrate in accordance with manufacturer's instructions. Butt carpet edges tightly together to form seams without gaps. Roll entire carpet area lightly to eliminate air pockets and ensure uniform bond. Remove adhesive promptly from face of carpet.

CLEANING AND PROTECTION:

Remove and dispose of debris and unusable scraps. Vacuum carpet using commercial machine with face-beater element. Remove spots and replace carpet where spots cannot be removed. Remove any protruding face yarn using sharp scissors.

Advise Contractor of protection methods and materials needed to ensure that carpeting will be without deterioration or damage at time of substantial completion.

Maintenance Materials: Deliver minimum 2 cartons of carpet squares for each pattern used to Owner's designated storage space, properly packaged (paper wrapped) and identified.

END OF SECTION

SECTION 09900
PAINTING

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of painting work is indicated on drawings and schedules, and as herein specified.

Work includes painting and finishing of interior and exterior exposed items and surfaces throughout 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 work.

Work includes field painting of exposed bare and covered pipes, ducts and of hangers in occupied areas, exposed steel and iron work, and primed metal surfaces of equipment installed under architectural mechanical and electrical work, and roof mounted mechanical and plumbing elements except as otherwise indicated.

"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.

Surfaces to be Painted: Except where natural finish of material is specifically noted as a surface not to be painted, paint exposed surfaces whether or not colors are designated in "schedules". Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. If color or finish is not designated, Architect will select these from standard colors or finishes available.

Following categories of work are not included as part of field-applied finish work.

Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finished or installer-finishing is specified for such items as (but not limited to) metal toilet enclosures, acoustic materials, architectural woodwork and casework, and finished mechanical and electrical equipment, including light fixtures, switchgear and distribution cabinets.

Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceiling in concealed areas and generally inaccessible areas, foundation spaces, furred areas, pipe spaces and duct shafts.

Finished Metal Surfaces: Unless otherwise indicated, metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting with the exception of exposed roof items.

Operating Parts: Unless otherwise indicated, moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts will not require finish painting.

Following categories of work are included under other sections of these specifications.

Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under various sections for structural steel, metal fabrications, hollow metal work and similar items.

Unless otherwise specified, shop priming of fabricated components such as architectural woodwork, wood casework and shop-fabricated or factory-built mechanical and electrical equipment or accessories is included under other sections of these specifications.

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.

QUALITY ASSURANCE:

Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

Coordination of Work: Review other section 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 or characteristics of finish materials provided for use to ensure compatible prime coats are used.

SUBMITTALS:

Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use.

Samples: Prior to beginning work, Architect will furnish color chips for surfaces to be painted. Use representative colors when preparing samples for review. Submit samples for Architect's review of color and texture only. Provide a listing of material and application for each coat of each finish sample.

On 12" x 12" hardboard, provide two samples of each color and materials, with texture to simulate actual conditions. Resubmit samples as requested by Architect until acceptable sheen, color, and texture is achieved.

DELIVERY AND STORAGE:

Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and 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.

Store materials not in actual use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.

Protect from freezing where necessary. Keep storage area neat and orderly. Remove oily rags and waste daily. Take all precautions to ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from handling, mixing and application of paints.

JOB CONDITIONS:

Apply water-base paints only when temperature of surfaces to be painted and surrounding air temperature are between 50 degrees F and 90 degrees F, unless otherwise permitted by paint manufacturer's printed instructions.

Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperature are between 45 degrees F and 95 degrees F, unless otherwise permitted by paint manufacturer's printed instructions.

Do not apply paint in snow, rain, fog or mist, or when relative humidity exceeds 85%, or to damp or wet surfaces, unless otherwise permitted by paint manufacturer's printed instructions.

Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Sherwin Williams Company
Glidden Coatings and Resins, Division of SCM Corporation
PPG Industries, Pittsburgh Paints
Pratt & Lambert (used as a basis for comparison)

MATERIALS:

Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.

Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other listed manufacturers.

Manufacturer's products which comply with coating qualitative requirements of applicable Federal Specifications, yet differ in quantitative requirements, may be considered for use when acceptable to Architect. Furnish material data and manufacturer's certificate of performance to Architect for any proposed substitutions.

Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.

PART 3 - EXECUTION**INSPECTION:**

Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.

Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

SURFACE PREPARATION:

General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.

Provide barrier coats over incompatible primers or remove and re-prime as required. Notify Architect in writing of any anticipated problems in using the specified coating systems with substrates primed by others.

Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program cleaning and painting so that contaminants from 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 efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.

Wood: Clean wood surfaces to be painted of 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, trim.

When transparent finish is required, use spar varnish for backpriming.

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.

Touch-up shop applied prime coats wherever damaged or bare, where required by other sections of these specifications.

Clean and touch-up with same type shop primer.

Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent.

MATERIAL PREPARATION:

Mix and prepare painting materials in accordance with manufacturer's directions.

Maintain containers used in 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 application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

APPLICATION:

General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

Surface treatments, and finishes, are indicated in "schedules" of the Contract Documents.

Provide finish coats which are compatible with prime paints used.

Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to ensure that 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 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.

Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.

Paint all Mechanical, Electrical and Plumbing items mounted on or penetrating through roof, including vent hoods, stacks and exhausts.

Finish exterior doors on tops, bottoms and side edges same as exterior faces, unless otherwise indicated.

Sand lightly between each succeeding enamel or varnish coat.

Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.

Schedule Painting: Apply first-coat material to surfaces that have been cleaned, pre-treated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as recommended by coating manufacturer.

Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed in mechanical equipment rooms and in occupied spaces.

Prime Coats: Apply 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 AND PROTECTION:

Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.

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 Architect.

At completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

INTERIOR PAINT SCHEDULE:

Drywall:

First coat: Pratt & Lambert Vapex Wall Primer
Second coat: Pratt & Lambert Pro-Hide Latex Satin Enamel
Third coat: Pratt & Lambert Pro-Hide Latex Satin Enamel

Ferrous Metal:

First coat: Manufacturer's Standard Red Lead Base Primer
Second coat: Pratt & Lambert Effecto Enamel, Semi-gloss
Third coat: Pratt & Lambert Effecto Enamel, Semi-gloss

Natural Finish Woodwork:

Preparation: Sealer/Stain
First coat: Pratt & Lambert Varmor Clear Finish Satin
Second coat: Pratt & Lambert Varmor Clear Finish Satin
Third coat: Pratt & Lambert Varmor Clear Finish Satin

END OF SECTION

**SECTION 10100
TACKBOARDS**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of tackboards is indicated on the drawings.

Types of tackboards specified in this section include the following:

Fabric-faced tackboard material for direct application to wall substrate (without frame).

SUBMITTALS:

Shop Drawings: Submit shop drawings for each tackboard. Include dimensioned elevations. Show fastening method.

PART 2 - PRODUCTS

MATERIALS:

Tackboard Material: Homasote, White Building Board, 1/2" thick

Fabric Facing:

Erin Cotton, G. Fishman's Sons, Inc., 1101-43 S. Des Plaines
Street, Chicago, IL 60607; 312/922-7250

PART 3 - EXECUTION:

PREPARATION:

Field Measurements: Take field measurements prior to the preparation of shop drawings and fabrication where possible, to ensure proper fitting of the work. Allow for trimming and fitting wherever taking of field measurements before fabrication might delay work. Align with cabinetry and other elements as per Interior Elevations.

INSTALLATION:

Wrap building board with fabric entirely and return material 6" minimum on back side. Wallpaper adhesive or similar approved material and staple type fasteners shall be used. Fabric shall be stretched tightly over board and stapled on back so as to conceal fastening method.

Board shall be attached to walls with finishing nails which allow nailheads to be concealed under fabric after being installed flush with board face. Install tight to wall around entire perimeter.

END OF SECTION

SECTION 10160 TOILET PARTITIONS

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of toilet partitions is indicated on drawings.

Types of toilet partitions required include the following:

Metal, floor mounted, head rail - braced.

Toilet accessories are specified elsewhere in Division-10.

See Structural Details for support at end of specification.

QUALITY ASSURANCE:

Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible, to ensure proper fitting of work. However, allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay work.

Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet partitions and related work; coordinate delivery with other work to avoid delay.

SUBMITTALS:

Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fastenings, and accessories.

Samples: Submit full range of color samples for each type of unit required.

PART 2 - PRODUCTS

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Accurate Partitions Div., United States Gypsum Company
Ampco Products, Inc.
Flush-Metal Partition Corporation
General Partitions Manufacturing Corporation
Knickerbocker Partition Corporation

MATERIALS:

General: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are not acceptable.

Steel Sheets for Baked Enamel Finish: ASTM A 591, Class C, galvanized-bonderized, of following minimum thicknesses:

Pilasters (unbraced):	16 gage
Panels and Screens:	20 gage
Doors:	22 gage

Concealed Anchorage Reinforcement: Minimum 12-gage galvanized steel sheet.

Concealed Tapping Reinforcement: Minimum 14-gage galvanized steel sheet.

Core Material for Metal Partitions: Manufacturer's standard sound-deadening honey comb of impregnated Kraft paper, in thickness to provide finished dimension of 1" minimum for doors, panels, and screens, 1-1/4" minimum for pilasters.

Pilaster Shoes: ASTM A 167, Type 302/304 stainless steel, not less than 3" high, 20 gage, finished to match hardware.

Stirrup Brackets: Manufacturer's standard design for attaching panels to walls and pilasters, either chromium-plated non-ferrous cast alloy ("Zamac") or anodized aluminum.

Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories of chromium-plated non-ferrous cast alloy ("Zamac").

Anchorage and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, chromium-plated steel, or brass finished to match hardware, with theft-resistant type heads and nuts. For concealed anchors, use hot-dip galvanized, cadmium-plated, or other rust-resistant protective-coated steel.

FABRICATION:

General: Furnish standard doors, panels, and pilasters fabricated for partition system, unless

otherwise indicated. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition-mounted hardware, accessories, and grab bars, as indicated.

Door Dimensions: Unless otherwise indicated, furnish 24" wide in-swinging doors for ordinary toilet stalls and 32" wide (clear opening) out-swinging doors for stalls equipped for use by handicapped.

Metal Toilet Partitions and Screens:

General: Pressure laminate seamless face sheets to core material and seal edges with continuous interlocking strip or with lapped and formed edges. Weld edges and corners, with exposed welds ground smooth.

Hardware: Furnish hardware for each compartment in partition system, as follows:

Hinges: Cutout inset type, adjustable to hold door open at any angle up to 90 degrees. Provide gravity type, spring-action cam type, or concealed torsion rod type, to suit manufacturer's standards.

Latch and Keeper: Manufacturer's standard surface-mounted latch unit, designed for emergency access, with combination rubber-faced door strike and keeper.

Coat Hook: Manufacturer's standard unit, combination hook and rubber-tipped bumper.

Door Pull: Manufacturer's standard unit.

Toilet Tissue Holders: Manufacturer's standard unit.

FINISHES:

Baked Enamel Finish:

Clean galvanized steel surfaces after fabrication and before application of enamel coating system, to remove processing compounds, oils, and other contaminants.

Prime metal with baked-on rust inhibitive primer.

Apply two coats of thermosetting enamel finish, applied by electrostatic process, and baked in accordance with paint manufacturer's instructions.

Color: Manufacturer's standard colors, as indicated or, if not indicated, as selected by Architect.

PART 3 - EXECUTION**INSTALLATION:**

General: Comply with manufacturer's recommended procedures and installation sequence. Install partitions rigid, straight, plumb, and level. Provide clearances of not more than ½" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with not less than two stirrup brackets attached near top and bottom of panel. Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Secure panels to pilasters with not less than two stirrup brackets located to align with stirrup brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.

Floor Mounted Partitions: Secure pilasters to supporting structure, and level, plumb, and tighten installation with devices furnished. Hang doors and adjust so that bottoms of doors are level with bottom of pilasters when doors are in closed position.

Accessories: Mount accessories to partition units in accordance with manufacturer's instructions.

ADJUST AND CLEAN:

Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors (and entrance swing doors) to return to fully closed position.

Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer, and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION

**SECTION 10500
METAL LOCKERS**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of metal lockers is shown on drawings.

Types of products in this section include the following: Double-tier lockers

QUALITY ASSURANCE:

Uniformity: Provide each type of metal locker as produced by a single manufacturer, including necessary mounting accessories, fittings, and fastenings.

SUBMITTALS:

Product Data: Submit manufacturer's technical data and installation instructions for metal locker units.

Samples: Submit color samples on squares of same metal to be used for fabrication of lockers.

JOB CONDITIONS:

Do not deliver metal lockers until building is enclosed and ready for locker installation. Protect from damage during delivery, handling, storage, and installation.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide products of the following or approved equal:

Wardrobe Lockers: Republic Steel Corp., Storage Systems Division
Suite 101, 2801 Finley Road, Downers Grove, IL 60515
"Standard" 12" wide, 16" deep, 72" high locker

MATERIALS:

Sheet Steel: Mild cold-rolled and leveled steel, free from buckle, scale, and surface imperfections.

Fasteners: Cadmium, zinc, or nickel plated steel; exposed bolt heads, slotless type; self-locking nuts or locker washers for nuts on moving parts.

Equipment: Hooks of cadmium-plated steel or cast aluminum.

FABRICATION, GENERAL:

Construction: Fabricate lockers square, rigid, and without warp, with metal faces flat and free of dents or distortion. Make all exposed metal edges safe to touch. Weld frame members together to form rigid, one-piece structure. Weld, bolt, or rivet other joints and connections as standard with manufacturer. Grind exposed welds flush. Do not expose bolts or rivet heads on fronts of locker doors or frames.

Frames: Fabricate of 16-gage channels or 12-gage angles, minimum, with continuous stop/strike formed on vertical members.

Finishing: Chemically pre-treat metal with degreasing and phosphatizing process. Apply baked-on enamel finish to all surfaces, exposed and concealed, except plates and non-ferrous metal.

Color: Provide locker units in color(s) as selected by Architect from manufacturer's standards. Unless otherwise indicated, concealed parts may be manufacturer's standard neutral color.

WARDROBE LOCKERS:

Body: Fabricate back and sides of minimum 24-gage steel, with double-flanged connections extending full height. Form top and bottom of not less than 24-gage steel, with flanged edges.

Provide 24-gage steel sheet hat shelf in double-tier units.

Form exposed ends of non-recessed lockers of minimum 16-gage steel.

Door: One-piece, minimum 16-gage sheet steel, flanged at all edges, constructed to prevent springing when opening or closing. Fabricate to swing 180 degrees unless otherwise indicated.

Ventilation: Provide vents in doors.

Hinges: Heavy-duty, not less than 0.050" thick steel, full-loop, 5-knuckle, tight pin, 2" high.

Weld to inside of frame and secure to door with not less than 2 factory-installed fasteners which are completely concealed and tamper proof when door is closed.

Provide at least 3 hinges for each door 42" high and over.

LOCKER ACCESSORIES:

Locking: Fabricate lockers to receive the following locking devices:

Padlock: Provided by Owner.

Equipment: Furnish each locker with the following items, unless otherwise shown:

Double-Tier Units: Hat shelf and not less than 2 single-prong wall hooks.

Number Plates: Manufacturer's standard etched, embossed, or stamped, non-ferrous metal number plates. Number lockers in sequence as directed by Architect.

Closed Bases: Continuous front and end bases to form complete bottom closure for all groups of units.

PART 3 - EXECUTION

Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication of special components, when possible, to ensure proper fitting of work. However, allow for adjustment and fitting of trim and filler panels wherever taking of field measurements before fabrication might delay work.

INSTALLATION:

Install metal lockers at locations shown in accordance with manufacturer's instructions for plumb, level, rigid, and flush installation.

Space fastenings about 36" o.c., unless otherwise recommended by manufacturer, and apply through back-up reinforcing plates where necessary to avoid metal distortion; conceal fasteners insofar as possible.

Install trim, metal base, sloping top units, and metal filler panels where indicated, using concealed fasteners to provide flush, hairline joints against adjacent surfaces.

ADJUST AND CLEAN:

Adjust doors and latches to operate easily without binding. Verify that integral locking devices are operating properly. Touch-up marred finishes, but replace units which cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION

**SECTION 10520
FIRE EXTINGUISHERS AND ACCESSORIES**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

J.L. Industries
Larsen's Manufacturing Company
Muckle Manufacturing Division of Technico, Inc.
Profile International, Inc.

UL-Listed Products: Provide new UL-listed fire extinguishers bearing UL "Listing Mark" for type, rating, and classification of extinguishers indicated.

PART 2 – PRODUCTS

Fire Extinguishers: Provide fire extinguishers at locations indicated by Architect on drawings.

Carbon Dioxide Type: IL-rated 5-BC, 5-lb nominal capacity, enameled metal container.

Mounting Brackets: Manufacturer's standard, of proper size for type and capacity of extinguisher indicated. Provide brackets for extinguishers.

PART 3 - EXECUTION

Installation: In accordance with manufacturer's directions for type of mounting required at height and locations indicated, or if not indicated, to comply with applicable regulations of governing authorities.

Locate units to give a maximum travel distance to any extinguisher of 75 feet.

END OF SECTION

**SECTION 10800
TOILET ACCESSORIES**

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Extent of each type of toilet accessory is indicated on the schedule at the end of this section.

Types of toilet accessories required include the following:

- Paper towel dispensers
- Toilet tissue dispensers
- Grab bars

Mirrors are specified in Section, "Mirror Units".

QUALITY ASSURANCE:

Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units.

SUBMITTALS:

Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide toilet accessories by one of the following:

- American Dispenser Company, Inc.
- Bobrick Washroom Equipment, Inc.
- Bradley Corporation
- Watrous, Inc.

MATERIALS, GENERAL:

Stainless Steel: AISI Type 302/304, with satin finish, 22 gage minimum, unless otherwise indicated.

Galvanized Steel Mounting Devices: ASTM A 386, hot-dip galvanized after fabrication.

Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.

FABRICATION:

General: Stamped names or labels on exposed faces of toilet accessory units are not permitted, except where otherwise indicated; unobtrusive labels on surfaces not exposed to view are acceptable. Where locks are required for a particular type of toilet accessory, provide same keying throughout project. Furnish two keys for each lock.

Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full-length stainless steel piano hinge. Provide anchorage which is fully concealed when unit is closed.

PART 3 - EXECUTION**INSTALLATION:**

Install toilet accessory units in accordance with manufacturer's instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.

ADJUSTING AND CLEANING:

Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

Clean and polish all exposed surfaces after removing labels and protective coatings.

END OF SECTION

SECTION 12390 CABINETS

PART 1 - SCOPE

A. Applicable requirements of General Conditions, Supplementary Conditions and Project Requirements apply to Work of this Section.

B. Index:

1.0	Scope	5.0	Products
2.0	Description of Work	6.0	Installation
3.0	Submittals	7.0	Cleaning
4.0	Product Delivery		

PART 2 - DESCRIPTION OF WORK

A. Extent of cabinets is indicated on drawings.

B. Sink units mounted in countertops are specified in a Division-15 section.

PART 3 - SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions indicating materials, hardware, and finishes used in fabrication of cabinets, as required to show compliance with specification.

B. Shop Drawings: Submit shop drawings indicating location and size of each type of cabinet and countertops, accessories, materials, finishes, hardware types and locations, fillers, etc. Include fully dimensioned plans and elevations and indicate details of anchorage to countertop and to walls.

C. Sustainability Standard: Kitchen and bath vanity cabinets installed must be in accordance with KCMA ESP 01, or an equivalent third-party certification, or contain no added urea-formaldehyde.

PART 4 - PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect wood cabinets and countertops during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

- B. Do not deliver wood cabinets and countertops until painting, wet work, grinding and similar operations, which could be performed before installation of cabinets, have been completed in installation areas or, if that is impracticable, in areas similar with ambient conditions.

PART 5 - PRODUCTS

- A. Acceptable Manufacturers: Subject to compliance with specifications, provide the following:
1. Contractor's Choice® (or approved equal) – laminate covered cabinets with flat panels.
 2. Solid Surfacing countertops (or approved equal), color to be determined by Architect.
- B. Wall Cabinets:
1. Face Frames: Cabinet face frames are constructed of 3/4" x 1-1/2" solid wood face frame. The components are fastened with a mortise and tenon joint, glued and pinned.
 2. Side Panels: Side panels are 3/8", 47 lb. furniture board covered on the outside with matching hardwood veneer where exposed. Interior is covered with a natural maple laminate. The side panels are drilled for adjustable shelves in all cabinets that receive shelves.
 3. Tops & Bottoms: 1/2", 47 lb. furniture board covered on both exterior and interior with a natural maple laminate to match the interior of the cabinet
 4. Backs: 3/8", 47 lb. furniture board, glued, rabbet and pinned with the ends. Interior surface covered with a natural maple laminate to match interior of cabinet.
 5. Shelves: Shelves are constructed of 1/2", 15 lb. furniture board. The shelves are covered with a laminate to match the interior. Front edges are banded to match the shelf. All shelves are adjustable. Shelf supports are drilled in all end panels and center stiles with additional center drillings in back panels for 42" and wider cabinets.

C. Base Cabinets:

1. Front Frames: Cabinet face frames are constructed of 3/4" x 1-1/2" solid wood frame with 3" center stile. The components are fastened with a mortise and tenon joint, glued and pinned.
2. Side Panels: Side panels are 3/8", 47 lb. furniture board covered on the outside with matching hardwood veneer where exposed. Interior is covered with a natural maple laminate. The side panels are drilled for adjustable shelves in all cabinets that receive shelves.
3. Bottoms: 3/8", 47 lb. furniture board covered on the top with laminate to match the interior of the cabinet. Bottoms are dadoed into the ends and backs, as well as glued and pinned.
4. Backs: 3/8", 47 lb. furniture board, glued, rabbet and pinned with the ends and bottoms. Interior surface covered with laminate to match interior of cabinet.
5. Shelves: the shelves are dadoed and glued with end panels. Shelves are constructed of 1/2" half-depth furniture board. The shelves are covered with a laminate to match the interior. Front edges are banded to match the interior.
6. Drawers: Drawer sides, backs and fronts are 1/2" furniture board. Bottoms are 3/8" furniture board and stapled into the sides, backs and fronts of the drawer. Drawer box butt joint stapled together.
7. Drawer Hardware: Manufacturer's standard self-closing coated drawer guides.
8. Exterior Finish: All wood exterior surfaces to receive manufacturer's standard natural maple finish.
9. Hinges: Manufacturer's standard self-closing, adjustable, concealed hinges.

D. Countertops:

1. Exposed Surfacing Material: High pressure plastic laminate, 0.050" thick, General Purpose Type (GP50); except 0.042" thick.
2. Substrate (Core) for Exposed Surfacing Material: Particleboard.
3. Countertop Configuration: Provide countertops with the following front styles (round-over nose), cove and backsplash style, unless otherwise indicated:
 - a. Front Style: round over.

- b. Cove: post formed - radius
 - c. Backsplash Style: D (Square edge) - side splash where shown
4. Countertop Thickness: As indicated, or, if not indicated, not less than 1-1/2", unless otherwise indicated, with substrate (core) not less than 3/4" thick.

PART 6 - INSTALLATION

- A. Install cabinets plumb, level, true and straight with no distortions. Shim as required using concealed shims. Where wood kitchen cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips and moldings as indicated or required, and in finish to match cabinet face. Cut 1" – 2" holes for plumbing and accurately scribe cabinet back to pipes and electrical outlets.
- B. Anchor cabinets securely in place with concealed (when doors and drawers are closed) fasteners, anchored into structural support members of wall construction. Comply with manufacturer's instructions for support of units.
- C. Attach countertops securely to base units. Spline and glue joints in countertops; provide concealed mechanical clamping of joint. Provide cutouts for fixtures and appliances as indicated; drill pilot holes at corners before making cutouts. Smooth cut edges and coat with waterproof coating or adhesive.
- D. Complete hardware installation and adjust doors and drawers for proper operations.

PART 7 - CLEANING AND PROTECTION

- A. Repair or remove and replace defective work as directed upon completion of installation.
- B. Clean exposed and semi-exposed surfaces, touch-up finish as required. Remove and refinish damaged or soiled areas.
- C. Protection: 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

SECTION 15000 PLUMBING

PART 1 - GENERAL

The "General Conditions" and the "Supplementary General Conditions" form a part of and are included as a part of this specification for plumbing.

SCOPE OF WORK:

This specification and accompanying plans provide for and shall govern the furnishing of all labor and the furnishing and complete installation ready for satisfactory service of all materials, equipment and apparatus necessary to complete the plumbing and drainage work as covered by drawings, specifications and as hereinafter listed.

Sanitary Sewer: Complete system of soil, waste and vent piping connecting each and every plumbing fixture or piece of equipment requiring same, blind tap sewer service to sanitary main, as shown on the plans. All work shall be installed as per the latest local and state codes.

Water Service: Connect to existing building water main as indicated on drawing.

Complete system of domestic cold water distribution piping system connecting to each and every plumbing fixture or other piece of equipment requiring same including piping, fittings and valves.

Complete system of domestic hot water piping connecting to each and every fixture or other piece of equipment requiring same.

All plumbing fixtures shall be complete with trim.

All insulation and pipe covering.

RULES AND REGULATIONS:

All work shall be installed in strict accordance with all applicable rules and regulations of local plumbing code, state government or other authorities having lawful jurisdiction. All work shall also conform to the rules of the NFPA.

This contractor shall cooperate with and assist other contractors on the job in conformity with all trade jurisdictional rulings. He shall perform all work covered by the drawings and specifications which properly come under the jurisdiction of the particular trade he represents. Where jurisdictional rules require the assistance of the plumbing mechanics in the moving of special equipment, the contractor shall provide such assistance.

TAXES:

Contractor shall include all applicable local, state or federal taxes.

PERMITS AND INSPECTIONS:

This contractor shall make application and pay for all permits and Certificates of Inspection required by the local, state or federal governments, public utilities or other authorities having lawful jurisdiction. This contractor shall secure and pay for EPA permits.

LOCAL CONDITIONS:

The contractor shall visit the site and determine all existing local conditions affecting work in this contract. He shall examine the architectural drawings and specifications to familiarize himself with the type of construction to be used for all new work and how it will affect the installation of work in this contract.

Failure to determine existing conditions or the nature of new construction will not be considered as a basis for the granting of additional compensation.

APPROVAL OF MATERIALS:

Within 15 days after acceptance of this contractor's bid, he shall submit to the Architect, for approval, a list of manufacturers of equipment proposed for the work. All equipment and materials shall be of the general type and quality herein specified. Wherever the words "or equal" appear in this specification, the Architect's decision as to quality and relative merit shall be final.

Selection of major items of equipment shall be confined to manufacturers mentioned in the specifications.

MINOR DEVIATIONS:

The dimensions and ratings of equipment herein specified or indicated on the drawings are intended to establish the outlines and characteristics of such equipment generally. Minor deviations will be permitted to allow the manufacturers specified to bid on their nearest stock equipment.

Where manufacturer's catalog numbers or type are mentioned in the specification or indicated on the drawings, they are intended to be used as a guide only and shall not be interpreted as taking precedence over the basic rating and duty specified. In all cases, manufacturer shall verify the duty specified with the particular characteristics of the equipment he intends to offer for approval.

Where the equipment furnished differs in physical size or arrangement from that specified or indicated on the drawings, the contractor shall make all alterations necessary to accommodate such equipment.

SHOP DRAWINGS:

After receiving approval on the equipment manufacturers, this contractor shall submit, without delay, five (5) copies each of drawings or cuts of all equipment for the approval of the Architect. Such submittals must contain outline dimensions, operating clearance and sufficient engineering data to indicate substantial compliance with the specifications.

The contract drawings contain information to a degree of detail which is considered to be both consistent with their scales and adequate to accomplish their purpose. Beyond this point they are diagrammatic.

Where the equipment furnished differs materially from that indicated on the contract drawings, or where the contractor considers additional detail of shop drawings essential to the proper fabrication or installation of equipment, he shall prepare such drawings and submit five (5) blueprint copies for approval.

RECORD DRAWINGS:

On a clean set of blue-line prints, clearly mark, as the work progresses, all changes and deviations from piping, equipment, duct layouts, etc., shown on the drawings so that, on completion of the work, there will be a record of the exact location of all piping and equipment. Record installed inverts of buried piping at end point of run and at points of change of slope. Transfer all notes and changes in a neat clear manner to one (1) complete set of sepia tracings and submit to the Architect/Engineer for approval.

COORDINATION AND SCHEDULING:

The contractor will confer with other contractors at the site to avoid interferences, so that maximum headroom and clearance may be obtained. In the event that interferences develop, the Architect's decision will be final and no additional compensation will be allowed for the moving of misplaced piping or equipment.

Trade priority list shall be as follows unless Architect's directs otherwise.

- Electrical Lighting Fixtures
- Mechanical Grilles and Diffusers
- Mechanical Ductwork
- Electrical Conduits
- Piping Systems

PART 2 - PRODUCTS

PLUMBING FIXTURES:

All fixtures shall be new and free from flaws or blemishes. All finished surfaces shall be clear, smooth and bright and guaranteed not to craze, discolor or scale. All visible parts of the trimmings of all fixtures, including faucets, escutcheons, wastes, strainers, traps, suppliers, stops, etc., shall be heavily chrome plated.

Fixtures shall be complete with all accessories, supplies, frames, wall hangers, etc. Fixtures shall be securely installed to structure and lavatories shall be supplied with steel brackets securely attached to masonry walls with expansion shields or bolted through. Fixtures shall be equal to Eljer, American Standard, Kohler and Elkay as noted.

All water closets, urinals and lavatories shall have water saving flushing devices and brass trim as per the local plumbing code.

FIXTURES SCHEDULE:

PART 3 - EXECUTION

SCAFFOLDING:

The contractor shall furnish all necessary scaffolding, staging or cribbing required for the completion of the work. All such scaffoldings, etc., shall be removed from the premises when its use is no longer required on the job.

HANGERS AND SUPPORTS:

The plumbing contractor shall provide pipe supports for all plumbing piping. These pipe supports shall be equal to Crawford Fig. 11, as required, bolted through channel web. At each point of support, provide a pipe covering protection saddle as hereinafter specified.

CUTTING AND PATCHING:

This contractor shall be responsible for all cutting and patching of building material required for the installation of his work as herein specified. No structural members shall be cut without the approval of the Architect and all such cutting shall be done in a manner directed by him.

All patching shall be done in a neat and workmanlike manner meeting with the approval of the Architect, by mechanics of the particular trade.

VENTS:

Each fixture shall be vented in accordance with the requirements of the local plumbing codes.

A vent stack shall be run parallel to each soil or waste stack to receive branch vents from fixtures. Each vent stack shall originate from the soil or waste pipe at its base. Each soil or waste stack and each vent stack shall be carried through the roof. Where possible, soil, waste or vent stacks shall be combined before running through the roof, so as to have as few roof openings as possible. Pipes running close to walls shall be offset away from such walls before passing through roof to permit proper flashing. All pipes passing through roof shall be provided with PVC increases one (1) size larger than the pipe but in no case less than 4". (See paragraph "Pipes and Fittings").

FLASHING:

Each vent pipe passing through roof shall be provided with flashing installed by general contractor. This contractor shall coordinate all sizes and locations with same.

ACCESS DOORS:

Access doors in wall or ceilings shall be supplied by this contractor and installed by other Division. Instruct general contractor as to required size and location of access doors required for services provided under this Division. Access doors shall be Milcor (18-gage) with concealed hinge, flush lock, concealed fasteners and two (2) coats of primer. Access doors to be of adequate size, not less than 12" x 12" and shall be located to provide for access to concealed equipment, valves, controls, etc., wherever possible, valves shall be grouped and larger access doors provided.

EXCAVATION AND BACKFILL:

Except where otherwise noted, all excavation, removal of excess excavated material and backfilling required for work under this Division shall be carried out by this contractor. All excavations shall be carefully backfilled with clean bank sand and tamped in place in 8" lifts.

For buried piping provide 6" of crushed slag or sand bedding on the firm subsoil under the piping and extend the bedding up to the centerline of the pipe. Excess earth shall be deposited on the premises where and as directed. Do all necessary pumping to maintain excavation for mechanical services free of water.

PIPE AND FITTINGS:

Above ground sanitary drains and vent pipes shall be Schedule 40 PVC pipe with fittings.

Below ground sanitary drains and vent pipe shall be PVC extra heavy wall - Schedule 40. Below ground sanitary drains outside of building shall be SDR 35 PVC pipe with approved locked in rubber sealing ring joints.

Below ground (only where necessary) cold domestic water piping shall be Type K copper tubing with no joints.

Above ground cold and hot water piping shall be Type L copper tubing with wrought copper solder type fittings.

Hot water pipes shall be kept at least 6" away from cold water pipes.

All piping below finished floor to be firmly supported in clean bank sand, with minimum 4" separation and properly protected before and during concrete pour.

Install all drain and soil piping with eccentric fittings of dimensions and in location shown on the drawings. Horizontal piping 4" and over shall be pitched on an even grade of not less than 1/8" per foot run. Smaller piping shall have greater pitch. Turns shall be made with long radius bends of 1/8 bends and fittings and 45 degree elbows.

No bull headed tees shall be used on water piping. All piping shall be straight, true and parallel and supported at intervals specified above or as indicated on the drawings. Run piping with proper slope to drain and vent. Branch pipes shall have greater slope.

GAS SERVICE:

Provide a complete natural gas service of adequate size including main shut-off, meter installation and piping. Verify and comply with all conditions and installation requirements with the gas company. This Contractor shall include in this Base Bid all costs required for the installation of the new gas system.

The gas company will provide tap-in to the main, service piping to the meter and the meter installation. The Contractor shall be responsible for all work beyond this point.

Run all new gas piping as shown on plans to each and every piece of equipment requiring same. Make soap test and prove tight. All connections off of gas main and at equipment shall be made by using gas cocks. All gas piping shall be Schedule 40 black steel pipe properly installed with joints made tight without caulking, lead or painting.

Furnish and install a drip-leg, gas cock and union before making connection to each item.

Gas Valves:

Valves 2" and under, square head, bronze cock, Crane #80E.

Valves 2-1/2" and over, lubricating plug cock, A.C.F.R. #1431.

Inside of all gas lines shall be blown out with compressed air prior to testing for leaks.

JOINTS:

All PVC joints shall be assembled with a solvent cement approved by the pipe manufacturer. Pipe shall be cut square and all edges shall be reamed and cleaned prior to joining pipe. Apply solvent cement evenly around the entire outside diameter of pipe and the inside diameter of socket. Insert pipe to the full socket depth of all fittings and rotate pipe or fitting 1/4 turn to ensure complete and even distribution of the solvent cement. The complete installation shall be as recommended by the manufacturer.

Make joints in plain end pipe or mechanical joint pipe with couplings approved for the service. Make joints between copper pipe and galvanized pipe with dielectric isolating couplings or bushings.

Ream threaded joints carefully and joint with compound on male thread only. Joints in plain end tile shall be made with butyl gaskets and encased stainless steel bands and in bell and spigot tile as specified for concrete pipe.

Underground copper piping shall be silfossed.

SUPPORTS:

Supply and erect all special structural steel work required for the installation of tanks, pumps, motors and other apparatus. Set all apparatus at least 6" above floor to a height indicated on the drawings. Supply and install all anchor bolts and other fastenings. Concrete bases and concrete floating pads, where called for, shall be provided by this contractor. Concrete bases and pads shall be 4" larger than the base of the apparatus.

NOISE CONTROL:

All equipment and materials shall be supplied and installed to eliminate all objectionable noise and vibration. This shall apply to both the details of manufacturer of the various equipment and to the methods and details of installation.

All piping shall be isolated from building structure, walls, furring, other piping, etc., to avoid noise transmission.

EXPANSION JOINTS AND ANCHORS:

Make provision for expansion and contraction of pipes installed under this Division by means of pipe loops. If use of pipe loops appears to be impractical, expansion joints shall be installed only after consultation with and obtaining express approval of the Engineer.

Type of anchors and method of securing same to structural framing of the building shall be subject to approval.

All piping shall be installed free from building structure to allow for movement without noise. Install fire spread and smoke developed rating insulation as required by code and acceptable to local authorities, around pipes when they pass through floor slabs or walls.

CLEANOUTS:

Supply and install cleanouts at the ends of all straight runs of sewers, at the base of all risers, in all horizontal branches to main and auxiliary stacks, or straight horizontal runs 50' apart on exposed or accessible traps and at all points of the system where so indicated or necessary to remove obstructions. Waste pipe connected to a sink shall have sufficient cleanouts to reach downstream each 20' maximum of the waste pipe.

The screw cap for the cleanouts shall be brass. The cleanout shall be full size of pipe up to 4" and 4" for larger pipes. Full size "Y" and "T" branches shall be provided for cleanouts on drains and their branches, except where otherwise noted.

Make cleanouts accessible and wherever necessary extend the branch connections to finished surface of floors or walls and finish with flush brass frames and cast brass plates of Zurn or equal manufacturer. Floor cleanouts shall be Zurn ZN-1400 series cast iron body with nickel bronze top secured with screws; style of tops to suit floor finishes. (Verify exact locations of cleanouts in finished area with Architect).

VALVES:

Supply and install valves on all main branches and at all equipment, tanks, pumps and elsewhere as shown or as required. All valves shall have minimum 125 psi pressure rating and shall be as shown or as required to suit job conditions.

Valves 3" and smaller shall be screwed pattern, all bronze or solder ends for copper lines, equal to NIBCO ball valves.

Butterfly valves of sizes above 3" shall be equal to Grinnel, U.L., Inc. approved cast iron body, bronze disc, stainless steel shaft, EPDM (Nordel) seat, full hung, water body for mounting between flanges. Valves to have bolt holes threaded so that valve can remain bolted to one (1) pipe flange while other flange is removed. Valves shall be complete with notched plate handle operator.

Check valves shall be equal to Crane 34 with 15 degree swing disc and shall be installed in horizontal only.

Piping to and from equipment shall have necessary shut-off valves, full size of line for isolating such equipment on system side of unions or flanges.

Outside hose bibbs or wall hydrants shall be non-freeze type equal to J.R. Smith #5610-H.

Provide shutoff valves to isolate each item of equipment, plumbing fixture, pipe riser or pipe branch.

All valves shall be placed to permit easy operation and access. Tag each valve for any kind of service included in this contract, with 1" diameter heavy brass tags secured to valve with brass hook. Prepare schedule giving the number of each valve, its service and general location.

TESTING AND START-UP:

After all piping has been installed, but before pipe covering has been applied or concealed piping has been covered up, test the tightness of all joints and the soundness of all pipes.

Notify the inspectors of authorities having jurisdiction, the Architect and the Engineer, of all tests and conduct same to their representatives. Provide all labor and equipment for tests and conduct same. Repeat tests until system is shown to be leak tight and in proper working condition. Submit three (3) copies of all tests reports to Architect/Engineer for approval. Perform all tests in shifts to allow other trades to proceed in accordance with building progress.

For piping other than drains and vent piping, apply 100 psi water pressure for four (4) hours. Repair leaks and retest.

All drains shall be tested for tightness and grade as required by the local and state plumbing authorities. Minimum test to consist of plugging all outlets of section being tested and filling with water to 36" above high point and measure drop in water level over two (2) hour period.

All gas piping shall be tested in accordance with the requirements of the inspection authority. Costs of all tests as required by said authority shall be borne by this subcontractor. All joints shall be tested with a soap and water solution during this test to check for leaks. Repair leaks and retest.

PIPING INSULATION:

All covering shall be done by factory trained mechanics and applied in an A-1 workmanship manner.

The following includes all hot water and cold water piping. Piping shall be insulated with 1/2" thick Armaflex pipe insulation. All joints to be cut square and sealed. The complete installation shall be per manufacturer's recommendations.

UNIONS:

Unions shall be provided in water piping at all fixtures, at all equipment and elsewhere as required

to make-up or disconnect piping. Where unions are installed to facilitate the removal of parts or equipment for inspection or cleaning, they shall be installed in position which will enable the part to be removed without disconnecting any piping except unions.

Unions shall be 150 psi, galvanized malleable iron, with brass to iron, with brass to iron ground set.

Insulating unions to be used between steel and copper pipe.

VACUUM BREAKERS:

Each water connection to a plumbing fixture or item of equipment on the house domestic water systems, which has a submerged inlet or a hose, shall be provided with a vacuum breaker approved by local and state health authorities.

GUARANTEE:

The contractor shall agree to conduct at no cost to the Owner, capacity tests on any equipment furnished by him when so requested by the Architect or his representative. The contractor shall guarantee all materials or repair without cost to the Owner, any such defects within one (1) year to date after acceptance of the building by the Architect. He shall also guarantee that all workmanship is of high quality and that all equipment furnished under this contract fulfills the requirements of the specifications.

END OF SECTION

SECTION 15500
MECHANICAL SPECIFICATIONS

GENERAL CONDITIONS:

All work under this heading of these specifications shall be subject to the applicable provisions of the "General Conditions" and "Supplementary General Conditions".

SCOPE OF WORK:

This specification and accompanying plans provide for and shall govern the furnishing of all labor and the furnishing and complete installation ready for satisfactory service of all material, equipment and apparatus necessary to complete the mechanical work as covered by drawings, specifications and as hereinafter listed.

Gas-fired furnaces.

D. X. air conditioning units, including coil, condenser and refrigerant piping.

Toilet exhaust fans.

Thermostats and control wiring.

Do all necessary cutting and patching.

Furnish all electric starters.

Furnish and install all ductwork with extractors, turning vanes, etc., as indicated on plans.

Insulation (Ductwork, Piping and Equipment).

Metalbestos flue.

Diffusers, grilles, dampers and duct accessories.

Balancing and testing of all systems.

GENERAL REQUIREMENTS:

Contractor shall visit site and fully acquaint himself with the conditions at the building site, as any contract for this work shall be based upon furnishing all labor and materials required to complete each installation ready for continuous and satisfactory operation all to the complete satisfaction of the Owner and the Architect.

After entering into a contract, the contractor will be held to complete all work necessary to meet the local requirements without expense to the Owner.

Contractor shall give all necessary notices, obtain all necessary permits and pay all fees in order that the work hereinafter specified may be carried out.

This contractor shall cooperate with other contractors in installing work which may affect his work.

He shall make proper arrangements to avoid interference with other trades in a manner approved by the Architect.

Changes made necessary through the neglect of the contractor to make proper arrangements shall be made at the contractor's expense.

This contractor will be held responsible for any damage caused to other contractor's work. The cost of repairs to such damaged work will be charged against this contractor.

All materials shall be new and the best of their respective kinds.

The use of other than "prime" grades will not be accepted.

Contractors shall take their own measurements at the building and shall be responsible for the correctness of same and the proper fitting of their work.

Adjust all work to fit actual job conditions.

This contractor shall submit samples of any and all materials which he proposes to use when required by the Owner's Representative.

In all cases where a device or part of the equipment is herein referred to in the singular number, it is intended that such reference shall apply to as many such devices as are required to complete the installation.

WORK BY OTHERS:

Electrical Contractor will provide power wiring for all electric motors and motor starters furnished by this Contractor. Controls and wiring for the temperature controls shall be the responsibility of HVAC Contractor to furnish and install.

Plumbing and painting (except as hereinafter specified) shall be done by other contractors.

Pipe chases shall be installed by the General Contractor. This Contractor shall install necessary hangers and be responsible for all details in connection with pipe chases.

This contractor will provide foundations for all equipment requiring same. All concrete work shall comply with the Concrete Section in the foregoing specification.

This contractor shall furnish access doors (as approved by the Architect/Engineer) for dampers and equipment but general contractor shall install same.

COORDINATION:

Lay out all work to be installed in consultation with the Architect in coordination with all trades engaged on this project. Cooperate with all other trades in order to coordinate all work and eliminate conflicts between this work and that of other trades.

This contractor shall be fully responsible for all conflicts between this work and that of other trades and make the necessary changes in this work without additional cost to the Owner, if work does not comply properly with these requirements. Compare drawings with those of other trades before proceeding with any part of the installation.

Any and all ductwork, grilles, diffusers or mechanical equipment which has been installed without checking for interferences and without additional expense to the owner.

Trade priority list shall be as follows unless Architect directs otherwise.

- Electrical Lighting Fixtures
- Mechanical Grilles and Diffusers
- Mechanical Ductwork
- Electrical Conduit
- Piping Systems

LAWS AND ORDINANCES:

All work shall be executed and inspected in accordance with rules and regulations of the local governing bodies and the State of Indiana.

If, in the opinion of the contractor, there is anything in the drawings and specifications that will not strictly comply with the above laws, ordinances and rules, the matter shall be referred to the attention of the Engineer for a decision before proceeding with that part of the work. No changes in the drawings or specifications shall be made without the full consent of the Architect, Engineer or the Owner.

PROPOSALS:

Bidders shall submit a lump sum price for all work included using only materials as specified. Contractors desiring to submit for the consideration of the Architect/Engineer, items of equipment or materials other than that specified, which they consider equal to those specified, may do so but only in the form of an alternate proposal, indicating the amount of additions to or deductions from the main proposal in each separate case.

JURISDICTION OF WORK:

When it becomes necessary for the complete fulfillment of this work for a contractor to furnish labor or materials other than that which is generally accepted by trade agreement or general practice to belong to his particular trade or branch of work, the contractor shall sublet same to a contractor engaged in the trade or branch of work involved to the end that there shall be no delay to or stoppage of work due to infringement of trade agreements as to jurisdiction.

DRAWINGS:

The plans show the general arrangement of all ductwork, piping and equipment. Contractor shall follow the mechanical plans as closely as possible for installation of ductwork, piping and equipment.

Should conditions necessitate any rearrangements, or if piping can be run to better advantage, the contractor shall prepare and submit drawings showing the changes before proceeding with the work. If such changes are approved, they shall become a part of the contract after their approval.

Due to the small scale of the drawings, it is not possible to show all offsets and details at every point at which exigencies of construction may require special attention.

Any additional duct fittings, ductwork, conduits or specialties and other appurtenances necessary due to field conditions, shall be furnished and installed by this contractor, at no extra cost to the Owner.

Special care shall be taken in the installation of all concealed portions of this work.

The specifications are supplementary to and define the contract drawings which illustrate the work and complete the specifications.

SHOP DRAWINGS AND APPROVAL OF MATERIALS:

The approval of the Architect/Engineer must be obtained for all materials, equipment, fixtures and other appurtenances furnished for this work before proceeding with the installation. This contractor shall submit within 20 days after the award of the contract, a complete list in triplicate (one for the Architect, one for the Engineer and one to be returned to the contractor).

<u>Item</u>	<u>Manuf. & No.</u>	<u>Remarks</u>
Gas-Fired Furnaces		
Evaporator Coils		
Condensing Units		
Exhaust Fans		
Diffusers, Grilles, Dampers		

Insulation, Piping, Ductwork
Metalbestos Flues
Hangers, Supports
Temperature Controls

This contractor shall submit five (5) copies of shop drawings for all equipment listed above, for final approval by the Engineer.

Approval granted on shop drawings is rendered as a service only and shall not be considered as a guarantee of measurements or of building conditions, nor shall it be construed as relieving the contractor of basic responsibilities under his contract.

Shop drawings shall be examined by this contractor prior to his transmitting them to the Architect/Engineer. Shop drawings submitted shall be signed or initialed by contractor and shall bear contractor's stamp or approval evidencing that he has examined and checked each drawing to be in accordance with contract requirements. Shop drawings which are submitted by or on behalf of this contractor, by subcontractor, manufacturer or other person, which does not bear such indication or approval, shall be construed as not having been examined, checked and approved by this contractor.

Failure to comply with any of the above mentioned requirements, including failure to indicate approval as indicated above, will be cause for drawings to be returned to the contractor for re-submission in proper manner.

If the shop drawings show variations from contract requirements because of shop practice or other reasons, contractor shall make specific reference to such variation in his letter of transmittal in order that, of acceptable, suitable action may be taken for proper adjustment; otherwise contractor will not be relieved of the responsibility for executing the work in accordance with contract documents even though such shop drawings have been reviewed.

The shop drawings shall be submitted in ample time to permit prints of approved drawings to be in the office of the Engineer before work covered by the drawings is released for delivery to job.

RECORD DRAWINGS:

On a clean set of blue-line prints, clearly mark, as the work progresses, all changes and deviations from piping, equipment, duct layouts, etc., shown on the drawings so that, on completion of the work, there will be a record of the exact location of all piping and equipment. Record installed inverts of buried piping at end point of run and at points of change of slope. Transfer all notes and changes in a neat clear manner to one (1) complete set of sepia tracings and submit to the Architect/Engineer for approval.

CUTTING AND PATCHING:

This contractor shall do all cutting, fitting and patching necessary for the running and securing of his equipment, etc., and shall provide all supports necessary for same and all bracing and anchorage of his work so directed by the Architect and subject to his approval. No cutting of structural work or fireproofing shall be done without the written consent of the Architect.

REMOVAL OF RUBBISH, ETC.:

All debris resulting from execution of this contract, also all surplus and discarded material, shall be removed from the premises by this contractor within three (3) days after the accumulation. Remove all plaster from piping, radiation, etc.; should this material not be removed within time specified, the Architect is hereby authorized to remove same and deduct cost of such removal from the contract price.

DEMONSTRATION OF COMPLETED SYSTEMS:

Verify completed systems and arrange date agreeable with Owner or his representative for a demonstration of all completed systems in the project. Demonstrate on a one (1) time bases, at time of completion, to the Owner's Representative, in the presence of the Architect/Engineer, the essential features of the mechanical allied systems and their compliance with the specifications. Show Owner drawings and relation to function of equipment and corresponding location in the project structure.

Show by start/stop operation, the manner of control, resetting of protective devices and the replacement of fuses. Demonstrate all temperature control systems and devices, including sequence of all controls.

SCAFFOLDING:

The contractor shall furnish all necessary scaffolding, staging or cribbing required for the completion of the work. All such scaffoldings, etc., shall be removed from the premises when its use is no longer required on the job.

FINAL COMPLETION:

All work shall be cleaned prior to substantial completion. This contractor shall clean all equipment, restore all damaged materials, remove all grease, oil, chemicals, paint spots and/or stains and generally leave the work in A-1 condition. Retouch and/or repaint all factory painted prime and/or finish coats where scratched or damaged. Whenever retouching will not be satisfactory, in the opinion of the Architect/Engineer, the Architect/Engineer has the option to require complete repainting until the desired appearance is obtained.

On completion of his work, this contractor shall remove and see that each of his subcontractors removes from the site all tools, equipment, surplus materials and rubbish pertaining to his own operations and pay all costs for such removal and disposition.

INSTRUCTIONS TO OWNER:

Compile and submit to the Owner, at completion of the work, two (2) neatly bound booklets containing operation and maintenance instructions for all equipment and systems.

Instruct building superintendent in operation and maintenance of all equipment and controls. During first year, check to see that all equipment is properly maintained and make periodic heating control adjustment to obtain maximum operating economy.

The cover of each manual shall also state the section of work covered, i.e., "plumbing", "heating, ventilating and air conditioning", "air balance", etc.

Each manual shall contain the following supplemental information.

- Complete written operating and maintenance instructions for each equipment item.

- Complete parts list for each equipment item.

- Duplicate valve tag list.

- Blueprint, shop or record drawings.

- Certified equipment drawings and/or catalog data (clearly marked for equipment furnished).

- Emergency operating instructions and/or list of service organizations (including address and telephone numbers) capable of rendering emergency service on 24-hour call.

ASME certificates, temperature control schematic drawing and other pertinent data as required by local, state and/or national agencies so governing and as herein specified, shall be sealed in a plastic laminated and/or enclosed under a glass front framed panel and mounted on the wall near each respective system, by the mechanical contractor responsible for that work.

On completion of the work, the contractor shall furnish and deliver to the owner any special tools that may be required for the proper servicing of any equipment furnished for the project.

MOTOR STARTERS:

This contractor shall provide all three (3) phase motor starters.

For each three (3) phase motor, furnish a combination magnetic motor starter with thermal overload protection for all 3 phase lines, two (2) auxiliary contacts, pilot light and H.O.A. switch. Starters shall be all one (1) manufacturer and as manufactured by Allen Bradley, Square D, Westinghouse or General Electric.

All voltage characteristics shall be verified with electrical contractor.

The electrical contractor shall furnish and install all single phase motor starters for fractional horsepower motors, ½ horsepower and under.

SOUND CONTROL:

Mechanical penetrations into mechanical equipment rooms shall be maintained airtight to prevent sound transfer.

All piping, ductwork, etc., shall pass through sleeves. Sleeves shall be packed tight with glass fiber or oakum and caulked on both sides with non-hardening sealant, Tremco "Acoustical Sealant" J-M "Duxseal" of GEMCO "Tuff-Bond #12".

DUCTWORK:

Galvanized Ductwork:

All galvanized ducts shall be constructed in substantially airtight manner and shall comply with "SMACNA" Standards for low pressure ductwork with deal classification (below 2000 fpm velocity) and 2" W.G. positive or negative pressures "B" construction. All changes or transitions in shapes shall be done with long slants not to exceed 24 degree angles. Flexible ductwork will not be accepted.

All galvanized air ducts shall be constructed of the following gauges except where specifically noted otherwise on the drawings.

<u>Duct sizes in Either Dimension</u>	<u>U.S. Standard Gauge</u>
0" to 18"	#26
19" to 30"	#24
31" to 42"	#22
43" and up	#20

All ducts over 18" in either dimension shall have the following transverse joints and galvanized angle iron stiffeners.

<u>Duct Size</u>	<u>Type Joints and Bracing</u>
19" to 30"	S slip 1" pocket lock on 8' centers with 1" x1/8" angles 4' from joint or S slip, 1"locks on 4' centers.

All ducts to have double locked longitudinal seams, properly hammered down.

Ductwork Support:

All galvanized ductwork 60" or smaller in maximum dimension shall be supported by 1" x 1/8" galvanized band iron hangers secured to building structure. Ducts larger than 60" in maximum dimension shall be supported by 1- 1/2 " x 1/8" galvanized band iron hangers. No hangers shall be secured to the underside of lightweight roof decking or lightweight floor slabs. Where required trapeze hangers using adequate strength steel angles shall be used and rods shall be secured to the building structure. Maximum spacing for all duct supports and hangers shall be 8'-0" O.C. all duct hangers and supports shall be in accordance with SMACNA standards.

Fiberglass ductboard shall be supported at all fittings and changes in direction for straight runs support duct every 4'-0" O.C. for ducts 24" in maximum dimension and larger. Support duct every 8'-0" O.C. for ducts under 24" in maximum dimension. Hangers shall be 1" x 18 GA. Galvanized band iron for ducts over 60" in maximum dimensions. All hanger and supports shall be secured to the building structure and shall be in accordance with SMACNA standards.

Perforated strap iron hangers will not be permitted.

All vertical ducts shall be supported by means of not less than two (2) galvanized structural angles secured to duct at the floor level.

General:

All 90 degree elbows not specifically shown on the drawings or details, to be of the radius type or shall be of the square type with turning vanes.

Failure to install square elbows with turning vanes will result in rejection of that portion of the work.

The dimensions of ducts shown on the drawings shall not be considered as absolute but any change from same shall be subject to the Engineers approval.

Change Shapes:

Change shapes of ducts shown; equivalent areas shall be maintained. In no case shall area be changed without special permission.

This contractor to furnish and erect all splitter type dampers, grilles, diffusers and other incidental minor appurtenances shown on the drawings or as covered by the specifications.

Excess vibration or air noise, in the opinion of the Engineer, shall be cause for rejection of and additional stiffening shall be provided as directed.

All duct dimensions shown are to be clear inside after insulation is applied.

SEALING AND LEAK TESTING:

All ductwork shall be airtight before concealment and/or before insulation is applied.

All Low Pressure Duct System: The corners of all joints, openings, etc., shall be sealed as hereinbefore specified. Particular care shall be taken on all ductwork on the suction side of all fans. Ductwork shall be tested in accordance with the SMACNA Leak Testing procedure. Leaks or imperfections that are detected shall be properly remedied and the tests repeated until all work is reasonably sound. Air leakage shall not exceed 1% of total system capacity and there shall be no audible leaks.

A duct system need not be completed before tests are conducted. Sections may be temporarily blanked off or suitably capped, etc., and such sections individually tested as specified. All equipment, portable blower, instruments, temporary connections, blank-offs, etc. necessary to conduct tests as specified shall be provided by the contractor, the costs of which shall be included in the contractors original bid for the work, without any additional costs to the Owner.

DUCTWORK INSULATION:

Provide all materials, labor and equipment to install the thermal insulation hereinafter specified or called for on the drawings all in a first class manner and complete in all details.

All insulating materials shall be installed in accordance with the manufacturer's recommendations as to the method of application and for the proper type of adhesives to be used, except where specifications specifically state other directions.

All equipment and work by other trades shall be protected during insulation installation.

Insulation shall be manufactured by Johns-Manville, Owens-Corning, Certainteed/Saint Gobain, Armstrong, Pittsburgh Plate Glass, Phillip Carey, Baldwin-Ehert-Hill or Pittsburgh Corning.

Mastics, sealers, cements and other sundry materials shall be the product of a named insulation manufacturer of Chicago Mastic, Insulcoustic, Benjamin-Foster, Arabel or Goodles-Moore.

All pastes, sizing and cements used in connection with all insulation work shall contain approved vermin and rodent repelling, mold resistant ingredients and shall be certified. Materials shall be non-flammable in the wet state, incombustible or fire resistant in the dry state and shall be UL approved. Thickness of coatings, sealers and adhesives specified herein shall serve as minimum requirements. Where manufacturer's recommendations exceed specified thickness, comply with manufacturer's recommendations.

All work and materials shall be in compliance with governmental department administration requirements. All work and materials shall be in compliance with National Fire Protection

Association Standard No. 90A.

External Duct Covering:

All combustion air and outside air intake ductwork shall be insulated on the outside with Johns-Manville Microlite. Insulation shall be cut slightly longer than the perimeter of the duct to insure full thickness at corners. The insulation shall have an average thermal conductivity not to exceed .30 btu-in. per square foot per degree F. per hour at a mean temperature of 75 degrees F.

All insulation shall be applied with edges tightly butted. Insulation shall be secured with adhesive. Adhesive shall be applied to entire metal surface so that insulation conforms to duct surfaces uniformly and firmly.

PIPE COVERING AND INSULATION:

All piping to be covered and surfaces to be insulated shall be thoroughly cleaned of any foreign matter before insulation is applied.

All components of insulation shall have a flame-spread rating of not over 25 and a smoke-development rating of not over 50, in accordance with Interim Federal Standard No. 00136A (Comm.-NBS) including coverings, mastics and adhesives.

Manufacturers: Johns-Manville, Mundet, Gustin-Bacon or Owens-Corning.

Special Note: Insulation on piping supported on clevis type hangers will pass through the hanger uninterrupted and be provided with pipe saddles.

Condensate Drain Pipes and Fittings: Cover with 1" fiberglass dual-temperature or Gustin-Bacon snap-on insulation with vapor barrier jacket factory applied. Install with cover sealed with adhesive only and vapor seal tape applied over joints. Aluminum band all joints. Insulation equal to Owens-Corning 8-1/4 pound density "fiberglass" pipe insulation with dual temperature vapor barrier jacket.

All Fittings for Condensing Drain Lines: Insulate with fiberglass cover to thickness of adjacent covering, wrapped with twine and covered with canvas.

End Protection Fittings: Provide Cheney or Grant Wilson Company segmented metal protection cups for ends of all pipe covering which terminates at equipment or unions, or taper insulation and canvas down to the pipe at these points in a neat and workmanlike manner.

All refrigerant piping to be insulated with minimum 1/2" thick, vapor tight, closed cell type insulation as manufactured by Armstrong, Nomaco or Johns-Manville. Installation shall comply with manufacturer's recommendations.

FLASHING:

Flash and counterflash wherever sheet metal ducts of other sheet metal construction passes through roof or outside walls. Flashings to be 18 gauge galvanized metal, unless stated otherwise on the plans.

VIBRATION ISOLATORS:

Contractor shall make provisions in the installation of his work so that noises or vibrations will not be transmitted through foundations, walls, columns, ducts, piping, etc., so as to be objectionable in any manner whatsoever and shall be subject to the approval of the Architect and the Owner. All equipment shall be selected and installed with this in view. If any equipment provided by the contractor exceeds reasonable requirements as to quietness or vibration for its type and use when operating under continuous demand, it shall be altered or replaced as determined by the Architect, free from any costs to the Owner.

Contractor shall furnish and install vibration eliminators and isolation equipment as manufactured by the Consolidated Kinetics Corporation, motors, pumps, air compressors, etc., as indicated on the drawings, specified or as required.

The isolation and vibration eliminator equipment manufacturer shall be totally responsible for the selection of the proper units for their loadings, quantities, etc., and he shall guarantee that each installation and its application shall have a vibration efficiency of 90% or greater. As a minimum, this contractor shall provide types of vibration eliminators as indicated on the drawings.

FLEXIBLE CONNECTIONS:

Flexible connections shall be provided on all ductwork connections to air handling units and exhaust fans.

Flexible connections shall be Ventglas, metal edge, 24 gauge with neoprene as manufactured by Vent Fabrics.

Duro-Dyne fire and flame retardant connections will be acceptable.

SHUT-OFF AND CONTROL DAMPERS:

Provide manually operated shut-off and control dampers complete and with necessary linkages and manual adjustments.

FIRE DAMPERS:

Fire dampers shall be installed in supply, return and exhaust ducts where indicated on the drawings and located in compliance with all applicable codes, local, state, insurance and other authorities having jurisdiction. They shall comply with requirements outlined in the latest issue of NFPA

Bulletin No. 90A. Fire dampers shall be Air Balance, Inc., Model #119, Type A, horizontal (spring loaded). Vertical are guillotine type. All fusible links to be standard 200 degrees F. unless otherwise required by code.

Provide an access door at each fire damper location for accessibility to the fusible linkage; this must be readily accessible at all times. These access doors shall be hinged or cam latched with vinyl gasket to provide tightest possible seal between the duct and frame. Doors shall be self-tightening and gasketed with hand-operated cam locks and will be fully insulated. Access doors shall be Air Balance, Inc. fire/seal or approved equal.

LOCATING AIR OUTLETS:

Consult the mechanical and architectural plans and elevations for exact location of all air outlets and ceiling grilles. Verify the exact location of all outlets in the field with the Architect.

CLEANING DUCTWORK:

All ductwork shall be thoroughly cleaned internally and externally before ceiling is installed and where the ductwork is exposed before the ventilated or air conditioned space is decorated.

Clean all casings, filters, equipment, etc., furnished on the job, inside and out and leave same in a clean condition and in complete working order at final completion of the building.

INSERTS AND SLEEVES:

This contractor shall lay out all work in accordance with approved shop drawings and shall provide shop drawings for installation of all sleeves necessary to complete his work, in advance of pouring of slabs or construction of walls.

Insert: Provide necessary inserts for installing pipe and equipment hangers. All drilling and patching for inserts and anchors shall be by each trade.

Floor Sleeves: Standard weight galvanized steel pipe with bottom flush, bottom surface, extended 1" above finished floor and caulked.

Wall Sleeves:

Foundation Walls: Cast iron fabricated sleeves, flush inside and outside, caulked.

Masonry and Concrete Walls: Standard weight galvanized steel pipe, flush with wall surface at both ends.

Interior Partitions and Ceiling: 20 gauge galvanized steel with lock joints.

Sleeves for uninsulated piping shall be two (2) sizes larger than pipe passing through. Sleeves for insulated piping shall be large enough to accommodate the full thickness of the pipe covering with clearance for expansion and contraction.

Annular space between interior surface of all sleeves and the pipes shall be caulked with butyl base caulking compound unless otherwise specified.

Floor and Ceiling Plates: On all exposed pipes passing through floors, walls, partitions, plaster furring, provide 1" split type steel plates. In finished rooms, plates shall be chrome. In unfinished room, plates shall be prime coated.

REFRIGERANT PIPING AND ACCESSORIES:

Refrigerant lines shall be Type "M" copper tubing.

All refrigerant piping and accessories shall be sized and of the number as per equipment manufacturers recommendations and requirements.

Fittings for flare joints shall be standard SAE forged brass flare type conforming to ARI Standard #720 with short shank flare units. Fittings for brazed joints shall be wrought copper or forged brass sweat fittings.

Joints in copper tubing shall be brazed with silver solder.

HANGERS AND SUPPORTS FOR PIPE:

All hangers, brackets and clamps shall be of standard weight or malleable iron as specified for each use. Pipes and ductwork supported from concrete construction shall use approved concrete inserts. Perforated strap hangers are not permitted.

Where three (3) or more pipes are run parallel, they shall be supported on trapeze hangers. Use trapeze hangers where ducts interfere with piping. There shall be at least one (1) hanger for each section of pipe.

Hangers and rods shall not penetrate piping insulation. Vertical risers shall be supported by riser clamps at each floor line. Pipe hangers shall be clevis roller and support type. Pipe rods shall be used where required by the Engineer.

Sizes of hanger rods shall be as follows:

Up to and including 2" pipe	3/8" rods
2- 1/2 " and 3" pipe	1/2 " rods

Spacing of supports shall be as follows:

½ " and ¾" pipe
1" and 1- ½ " pipe
2" to 3" pipe

Materials shall be as follows:

Trapeze Hangers: 1- ½ " x 1- ½ " x 18" angle with ¾" rods

Clevis Hangers: Elcen #12A for all insulated piping sized for insulation to pass through uninterrupted.

Pipe Shields: Elcen #240A rib-loc shield for insulated piping.

Riser Clamps: Crawford No. 35 and 36, Grinnell or Crane.

Pipes Mounted to Steel Beam and Bar Joist Construction: Appleton "Sta-Tite", Grinnell or Crane.

PAINTING:

All shop fabricated and factory built equipment not galvanized or protected by plating shall be cleaned and given one (1) shop coat of red lead or zinc chromate primed before delivery to the site. Any portions of the shop coat damaged in delivery or during construction shall be recoated. All finish painting will be done under the "Painting" section of the specifications.

Do not paint nameplates, labels, tags, stainless steel or chrome plated items such as valve stems, shafts, levers, handles, trims, strips, etc.

THERMOMETER:

Furnish and install thermometers where shown on the drawings and where required. Palmer, Terice or equal to Taylor #11ET-510 with separable socket with extension neck for insulation. Sockets and bulbs long enough for bulbs to be immersed completely in liquid. Locate thermometers to provide convenience in reading.

ACCESS DOORS:

Any access doors required for access to valves will be furnished by this contractor for installation by general contractor. Access doors shall be Milcor Type "C" or equal, as approved.

BALANCING AND TESTING OF THE SYSTEM:

After all refrigerant piping has been installed, but before pipe covering has been applied or concealed piping has been covered up, test the tightness of all joints and the soundness of all pipes.

Notify the inspectors or authorities having jurisdiction, the Architect and the Engineer, of all tests and conduct same to their satisfaction, in presence of their representatives. Provide all labor and equipment for tests and conduct same. Repeat tests until system is shown to be leaktight and in proper working condition. Submit three (3) copies of all test reports to Architect/Engineer for approval.

Perform all tests in shifts to allow other trades to proceed in accordance with building progress.

Perform tests are required to provide specified and satisfactory operation of all equipment. After installations are complete, adjust all dampers, controls, etc. to establish system operation as prescribed.

Before putting systems in operation, perform the following functions:

Clean filters, screens, strainers and dirt pockets.

Supply and install lubricants required for bearings, couplings, linkages, valves, etc. After completion of installation of all electrical motors, pumps, etc., these shall be completely relubricated and all bearings repacked. This work shall be done by installing subcontractor prior to putting equipment into operation and shall be in accordance with the manufacturer's requirements.

Manufacturer's representatives shall check equipment installation to ensure that all connections, alignment and other details affecting the equipment performance are in accord with manufacturer's requirements.

Instruct Owner's management personnel in system operation and see that arrangements have been made for regular maintenance of equipment and services where required.

Regulate and adjust all splitters, deflectors and dampers so that the inlet or outlet shall deliver or remove the required number of cubic feet of air per minute at the respective openings. This includes setting up damper position for minimum outside dampers and shall be marked as same.

Provide all instruments, testing equipment and qualified personnel that may be required for the test.

Submit to the Architect/Engineer three (3) copies of the final certified test readings with the following information.

The quantities of air at intake and discharge side of each air handler with outside air damper

closed. (These readings to be made when outdoor temperature is 90 degrees or higher.)

Static resistance in inches of water intake and discharge for each system.

The rpm of each fan or unit.

The volume of air handled by each exhaust fan.

GUARANTEE:

In entering into a contract covering the work, the contractor accepts the specification and guarantees the work will be carried out in accordance with the specified requirements of the specifications or such modifications as may be made in the contract documents.

Contractor further agrees to hold himself responsible for any defects which may develop in any part of the entire system, including apparatus and appliances as provided for under this specification, due to faulty workmanship, design or material and to replace and make good without cost to the Owner any such faulty parts of construction which may develop defects within one (1) year from the date of final acceptance. This guarantee shall be submitted in writing and shall be dated as determined by the Engineer when, in his opinion, the contract is basically complete.

END OF SECTION

SECTION 16000
ELECTRICAL

GENERAL CONDITIONS:

All work under this heading of these specifications shall be subject to the applicable provisions of the "General Conditions".

SCOPE OF WORK:

It is the purpose and intent of this specification that the contractor shall furnish all labor and materials necessary to provide a complete installation of electric wiring for all lighting, power and other services as indicated on the plans and as hereinafter specified complete in all details, including all parts auxiliary to the work and such materials and fittings as may be required to make the work complete for the purpose intended.

The work is to include, but not be limited to the following.

- a. Complete electrical service and power distribution system.
- b. Conduit and wiring for all power and lighting loads.
- c. Safety disconnect switches and fuses where required.
- d. Lighting switches, receptacles and special wiring devices.
- e. Furnishing and installing disconnects for motors where required. Motor controllers by others except as noted.
- f. Lighting fixtures and lamps.
- g. Connection of equipment furnished and installed by others.
- h. Conduit and outlets for telephone.

WORK NOT INCLUDED:

All access panels necessary for access to electrical work shall be furnished by the electrical contractor and installed by the general contractor.

Temperature control system devices and other types of sensing controls, motors and packaged controllers, including all conduit and wiring between initiating type controls and the temperature control panels will be provided by the mechanical contractor under Division 15.

Telephone equipment and wiring will be furnished and installed by the Owner. Electrical contractor provides a raceway system only.

GENERAL REQUIREMENTS:

The drawings pertaining to this installation indicate generally the location of all outlets, panels, lighting fixtures, motors and other details necessary to the complete installation of the work. Bidders shall acquaint themselves with the working conditions and requirements at the building site as any contracts for this work will be based upon furnishing all labor and materials required to entirely complete the work ready for use.

Any failure by the contractor to acquaint himself with all the available information shall not relieve him from any responsibility for performing his work properly.

No additional compensation shall be allowed for conditions increasing the contractor's cost which were not known to or appreciated by him when submitting his proposal if the condition was obvious and could have been discovered by him.

Should any bidder consider any requirements of these specifications and drawings such as will make impossible the effective operation of any portion of the whole installation, he must embody in his proposal stipulations for any change which he deems necessary and the failure to do so shall be considered as any agreement on the part of the bidder to guarantee the effective operation of the work as herein provided for.

Any minor changes in the location of the outlets, etc. from those shown on the drawings shall be made without charge if so directed by the Architect/Engineer before installation.

All changes or deviations from the contract, including those for extra or for additional work, must be submitted in writing for an approval of the Architect. No verbal orders will be recognized.

All measurements must be verified by actual observation at the building and this contractor shall be responsible for all of this work fitting into place in a satisfactory and workmanlike manner to the approval of the Architect/Engineer.

This contractor shall confer with the other contractors regarding the locations and sizes of pipes, conduits, ducts, openings, switches, outlets, etc., in order that there may be no interferences between installations or the progress of the work for any contractor on the building.

Each bidder shall read the "General Conditions" of the contract preceding these specifications, as these singly and collectively are to apply to the operation of each contractor for the installation and branches of work specified and shown on the drawings.

LAWS AND ORDINANCES:

In the installation of this work, the contractor shall comply in every way with the requirements of the laws, ordinances and rules in effect in the State of Indiana and as set forth by the local governing bodies, the National Board of Fire Underwriters and the local utility company.

If, in the opinion of the contractor, there is anything in the drawings and specifications that will not strictly comply with the above laws, ordinances and rules, the matter shall be referred to the attention of the Engineer for a decision before proceeding with that part of the work. No changes in the drawings or specifications shall be made without the full consent of the Architect, Engineer or the Owner.

PERMITS AND FEES:

This contractor shall obtain and pay for all licenses, permits and inspections for all work covered by this contract. Final Certificate of Inspection shall be delivered to the Architect before application is made for final payment.

EXCAVATION AND BACKFILLING:

This contractor shall do all excavating required for his work. All excavations are to be conducted so that no walls or footings are disturbed or injured in any way. Remove all surplus earth not needed for backfilling and dispose of same on the premises or as directed. All backfilling shall be clean bank sand firmly tamped in place in 8" increments.

HOISTS, RIGGING, TRANSPORTATION AND SCAFFOLDING:

This contractor shall provide all scaffolding, staging, cribbing, tackle, hoists and rigging necessary for placing all of his materials and equipment in their proper places in the project. All such equipment shall be removed from the premises when its use is no longer required on the job.

This contractor shall pay all costs for transportation of materials and equipment to the job site and shall include such costs in his proposal.

PROTECTION:

This contractor shall provide protection to protect equipment and finished surfaces as required.

Contractor shall store all electrical materials and equipment prior to installation in a dry location so that corrosion and damage due to moisture will not affect same.

RUBBISH:

All debris, rubbish and excavation spoils resulting from the work herein specified shall be removed from the premises by this contractor as fast as it accumulates.

PROVISIONS FOR LATER INSTALLATION:

Where any electrical work cannot be installed as the structure is being erected, this contractor shall provide and arrange for the building-in of boxes, sleeves, inserts, fixtures or devices necessary to permit installation of the omitted work during later phase of construction. This contractor shall arrange for any lay-out, chases, holes or other openings which must be provided in masonry, concrete or other work.

This contractor shall be responsible for informing himself of the nature and arrangement of the materials and construction to which his work attaches with or passes through.

CUTTING AND PATCHING:

All cutting and patching of masonry, concrete or iron work belonging to the construction which must be done in order that the electrical work may be properly installed shall be done by this contractor. All disturbed construction or finish must be replaced or repaired to the Architect's satisfaction at this contractor's expense. Under no condition shall structural work be cut except upon approval of the Architect.

In general, cutting through walls and partitions is to be avoided and only where absolutely necessary will same be permitted. When it is necessary, cutting shall be done by this contractor with a power drill in a careful manner and the openings filled about pipes as directed by the Architect.

CONCRETE PADS AND BASES:

All concrete pads and bases required for electrical work shall be furnished by the General Contractor. Electrical Contractor shall coordinate installation.

SHOP DRAWINGS:

This contractor shall submit five (5) copies of shop drawings for all special equipment such as lighting fixtures, power and lighting distribution panels, special equipment, etc., and all stock devices, apparatus, equipment, etc., that require modification before installation.

Shop drawings shall be submitted in ample time to permit prints of approved drawings to be in the office of the Engineer before work covered by the drawings is ordered.

RECORD DRAWINGS:

On a clean set of blueline prints, clearly mark, as the work progresses, all changes and deviations from piping, equipment, duct layouts, etc., shown on the drawings so that, on completion of the work, there will be a record of the exact location of all piping and equipment. Record installed inverts of buried piping at end point of run and at points of change of slope. Transfer all notes and changes in a neat clear manner to one (1) complete set of sepia tracings and submit to the Architect/Engineer for approval.

DEMONSTRATION OF COMPLETED SYSTEMS:

Verify completed systems and arrange date agreeable with Owner or his representative for a demonstration of all completed systems in the project. Demonstrate on a one (1) time basis, at time of completion, to the Owner's representative, in the presence of the Architect/Engineer, the essential features of the electrical allied systems and their compliance with the specifications. Show Owner drawings and relation to function of equipment and corresponding location in the project structure.

Show by start/stop operation, the manner of control, resetting of protective devices and the replacement of fuses.

Demonstrate area lighting and show the location of panelboards and protection, time switches and settings, etc.

TESTING:

After wires and cables are in place and connected to devices and equipment, the electrical system shall be tested for shorts and ground. All hot wires, if shorted and/or grounded, shall be removed and replaced, if required. All grounds, shorts and high resistance splices shall be rectified as directed.

Any wiring device, electrical apparatus, or lighting fixture furnished under this Division, if grounded or shorted on any integral "live" part, shall be removed and the trouble rectified by replacing all defective parts or material, as directed.

FINAL COMPLETION:

All work shall be cleaned prior to substantial completion.

This contractor shall clean all equipment, restore all damaged materials, remove all grease, oil, chemicals, paint spots and/or stains and generally leave the work in A-1 condition.

Retouch and/or repaint all factory painted prime and/or finish coats where scratched or damaged. Whenever retouching will not be satisfactory, in the opinion of the Architect/Engineer, the

Architect/Engineer has the option to require complete repainting until the desired appearance is obtained.

All lamps, fixtures, lenses, reflectors shall be cleaned by this contractor not sooner than ten (10) days prior to substantial completion of the work.

On completion of his work, this contractor shall remove and see that each of his subcontractors removes from the site all tools, equipment, surplus materials and rubbish pertaining to his own operations and pay all costs for such removal and disposition.

MATERIALS AND WORKMANSHIP:

All materials used through this installation shall be the best of their respective kind and the same shall be installed in a neat, accurate and workmanlike manner and in a manner to permit the work of other trades to also be installed wherever the work covered by this specification meets with or must be considered in connection with the work of other trades working on this installation. This workmanship and these materials must be executed and furnished in a manner entirely satisfactory to the Architect and the Engineer.

Wherever in the specifications, a particular article or material is definitely mentioned, it shall be provided and no substitutions shall be allowed, especially insofar as the submittal of the base bid is concerned. Should this contractor desire to substitute other materials for those specified, he may submit these substitutions in the form of voluntary alternates to the base bid, designating appropriate additions or deductions for each alternate. Should no alternates be submitted, the contract shall be entered into on the basis of the specified base bid equipment. Final approval of all equipment shall be by the Engineer. Voluntary alternates will only be recognized if declared on the bid form.

COORDINATION:

Lay out all work to be installed in consultation with the Architect in coordination with all trades engaged on this project. Cooperate with all other trades in order to coordinate all work and eliminate conflicts between this work and that of other trades.

This contractor shall be fully responsible for all conflicts between this work and that of other trades and make the necessary changes in this work without additional cost to the Owner, if work does not comply properly with these requirements. Compare drawings with those of other trades before proceeding with any part of the installation.

Any and all electrical wiring, conduits or electrical equipment which has been installed without checking for interferences and without thorough coordination with other trades, shall be moved or relocated without additional expense to the Owner.

Trade priority list shall be as follows unless Architect directs otherwise.

- a. Electrical Lighting Fixtures
- b. Mechanical Grilles and Diffusers
- c. Mechanical Ductwork
- d. Electrical Conduits
- e. Piping Systems

JURISDICTION OF WORK:

Whenever it becomes necessary for the complete fulfillment of this specification for this contractor to furnish labor or materials, other than that which is generally accepted by trade agreement or general practice to belong to his particular trade or branch of work, he shall sublet such work or shall employ workmen regularly employed, to the end that there will be no delay or stoppage of work due to infringement or alleged infringement of trade agreements as to jurisdiction.

CONDUIT AND INSTALLATION:

Hot dipped, galvanized steel conduit or galvanized, electric metallic tubing shall be used for all work in connection with this contract. The minimum size of conduit permitted for use in connection with any or all branches of this work shall be ½ ".

All conduits as far as possible, shall be concealed in the wall partitions, below floor and above finished ceilings of all areas. All exposed conduits are to be installed at right angles to walls or partitions. This contractor shall route exposed conduit in the least noticeable manner as directed by the Architect.

Conduit runs for outside lights shall be run on the inside of the building or concealed in wall construction and turn out to the outside of the building only at outlets, unless indicated otherwise on the plans.

All conduits shall be carefully reamed to remove all burrs and end of pipe must butt into couplings the full distance. Not more than three (3) 90 degree bends in any one (1) run. Exposed conduits and conduits concealed above finished ceiling are to be installed plumb and straight and securely fastened to the building structure with suitable clamps, minimum every 8'.

Conduits laid in concrete floor slab or earth shall be minimum ¾" rigid, heavy wall (or IMC, if approved by local code) and shall have all joints made up so as to be watertight.

All EMT (thinwall) conduits shall be connected to the outlet boxes and panelboards by means of "gland" type connectors. Couplings between conduits shall be "gland" couplings. Conduits shall enter all couplings and connectors the full distance required and shall be securely held in place by the tightening of a "locking nut". "Crimp-on" or "set-screw" type couplings will not be accepted.

No running threads shall be used. Erickson Couplings or approved equal shall be used for this purpose.

Flexible conduits used for final connections to motors or equipment shall be Sealtite or Flexon with proper fittings as manufactured by Pyle-National or Efcor or Appleton Electric. Final connections to recessed lighting fixtures shall be Greenfield with proper fittings.

All rigid conduit terminations shall be installed with double locknuts and fiber bushings. All fittings shall be made wrench tight.

Where conduits are installed within concrete slabs, they shall run parallel to the building walls and partitions and shall be kept at least 6" apart. In no instance shall conduits routed through slabs be larger than 1/3 the slab thickness.

Avoid routing conduits through building expansion joints wherever possible. If they cannot be avoided, Crouse-Hinds, Type "XJ" or approved equal fittings, shall be properly installed with grounding straps.

It is intended that the conduits used on the entire installation shall be electrically perfect and continuous from the serviceboard to each of the distribution centers and from the distribution centers to all outlets, motors and various systems specified.

All conduit, couplings and fittings shall conform to the specifications of the American Standard Association as manufactured by Youngstown Sheet and Tube Company, National Electric Products Company, Spang-Chalfant, Inc., Allied Tube or General Electric Company.

All conduit roof penetrations shall be routed through a roof curb; properly seal conduit to assure a watertight condition.

OUTLET, JUNCTION AND PULL BOXES:

An approved iron or steel outlet box of proper type shall be installed for all outlets. Outlet boxes to have same finish as conduit. In setting all outlet boxes, extra precaution shall be taken that same are securely fastened to the building, set true and plumb. No part of the box or cover shall extend beyond the finished plaster or trim. Contractor shall be required to reset, at his own expense, any boxes not installed in accordance with this specification.

Square cornered device and outlet box extension rings shall be used in all finished masonry walls to assure a close fit around box openings.

Pull and junction boxes in exposed runs shall be cast fitting with stamped steel covers. Fittings installed outdoors, exposed to weather, shall have moistureproof gaskets with cast metal covers.

Pull boxes may be inserted in long runs to facilitate the pulling of wires. In no case shall a box be

installed in an inaccessible location. Pull boxes or fittings shall be of the same finish as conduits and made from code gauge steel.

All pull boxes installed in finished areas shall have #19 gauge satin stainless steel covers (with rolled edges) and screws. Where exposed to weather or outdoors, all boxes shall have cast metal covers fitting with approved gaskets.

HANGERS AND SUPPORTS:

All exposed conduit and/or runs of conduit concealed above dropped ceiling shall be supported by means of clamps, minerallac hangers or "U" bolts. Attachment to concrete or masonry surfaces shall be made by means of toggle bolts or "A-J" anchors.

All surface mounted pull boxes, outlet boxes, etc., shall have supports independent of conduit system and securely anchored to the structure. All conduits must be independently supported from the structure. No conduits shall be supported from the ventilating ducts, mechanical piping or their hangers. Where special hangers are required for fixtures and multiple conduit runs, style of hanger or method of installation is to be approved by the Engineer.

WIRES AND CABLES:

All wires and cables shall be copper.

All wires #12 and #8 inclusive shall be solid conductor. All wires and cables #6 and larger shall be stranded. All shall be Type THW, 600 volt.

No wires smaller than #12 shall be used unless specified. All runs 75' to first outlet and over shall be #10.

All wire within fluorescent channels shall be #14 AF, minimum.

All conduits shall be dry and thoroughly swabbed out before wires are installed.

Wire and cable splices and joints shall be mechanically and electrically perfect. Twisted splices and joints shall be drawn up tight and fitted with proper Scotchlok or Ideal electrical spring connectors.

Solderless connectors and lugs shall be used on all wires and cables #6 and larger. All splices and joints #6 and larger shall be tightly taped with best grade rubber and friction tape or a high grade vinylite plastic tape to an insulation value equivalent to or greater than that of the wire insulation.

All wires and cables shall be as manufactured by Okonite Company, General Electric Company, General Cable Corporation, Rome Wire and Cable Company, Simplex Wire and Cable Company, Paranite or Anaconda.

It is intended that the voltage drop shall not exceed 3% from the branch panel to the last outlet.

OUTLET ACCESSORIES:

Refer to Outlet Schedule for type and quality of devices. Where groups of devices are set adjacent to each other, they shall be mounted in a single continuous gang plate, unless noted otherwise.

Verify all device and plate finishes with Architect prior to installation of same.

Furnish and install ground fault interrupter devices and/or circuits as shown on drawings and for all areas required by local code authorities.

SAFETY SWITCHES:

All safety disconnect switches shall be fused or nonfused as noted, Type "A", in NEMA-1 enclosures. Disconnect switches mounted at exterior locations shall be weatherproof in NEMA-3R enclosures.

PANELBOARDS:

This contractor shall furnish and install all panelboards for branch circuit distributions at the locations shown on the drawings. The panelboards shall be enclosed in code-gauge cabinets which shall meet all requirements of National Electric Code.

All circuit breakers shall be of the size scheduled on the drawings and all multi-pole breakers shall be common trip. All panelboards shall have all the number of branch circuits as called for on the drawings.

Breakers shall be of the thermal-magnetic type rated at not less than 125 volts, line to neutral. Breaker mechanisms shall be quick-make, quick-break with trip-free feature.

This contractor shall provide typewritten directories sealed in plastic with all circuit and subfeeds correctly identified thereon, for each panelboard.

All panelboards shall be of one manufacturer (I.T.E.) Gould, Square D, Sylvania or Westinghouse; size and quality indicated on drawings.

All panels shall have concealed trim clamps and flush locks. All panels shall be keyed alike.

LIGHTING FIXTURES:

This contractor shall furnish and equip all lighting outlets with lighting fixtures in accordance with the schedule shown on the drawings. All lighting fixtures shall be of the type, quality, finish and

manufacturer listed.

Contractor's attention is called to the type of ceiling construction so that he can furnish proper and sufficient support for all fixtures as required .

No breakable part of a light fixture shall be installed until so ordered by the Architect.

TEMPORARY SERVICE:

This contractor shall furnish and install the temporary service for light and power use during construction, including open branch circuit wiring complete with sockets, lamps and receptacles with ground fault detection devices as required by OSHA Code. The contractor is to provide not less than one (1) ceiling outlet and one (1) receptacle for every 600 square feet of floor space. Temporary wiring shall also include a 240 volt line to point reasonably convenient to the general location of all heavy power tools.

SECTION 16100 - ELECTRICAL:

RELATED DOCUMENTS:

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

Cost of electric power used during construction of this building shall be paid by general contractor. This contractor shall furnish, install and maintain the temporary wiring, including the meter, as required.

This contractor shall remove all temporary wiring upon completion of the work.

ELECTRICAL SERVICE:

Electric service shall be provided by utility company. Electrical contractor shall furnish and install all work in accordance with utility company specifications. Coordinate all service work with utility company upon starting contract work.

Excess facilities charges by utility company shall be submitted to the Owner for payment.

All conduit, cable, metering and distribution equipment shall be as furnished and installed by electrical contractor, as indicated on the drawings or as required.

GROUNDING SYSTEM:

A complete grounding system with all accessories and appurtenances, shall be provided as required and specified. The entire system shall be in accord with all applicable standards of the ANSI, IEEE

and NEC and local electrical codes.

Electrical system neutrals and ground bus bars, as well as noncurrent carrying metal parts of the electrical wiring system, shall be grounded. All major equipment frames shall be grounded.

Grounding conductors shall be 600 volt insulated copper wires, bare copper wires and copper bus boards. Insulated wires shall be attached to the water pipe with a silicon bronze U-bolt connector as manufactured by Thermit welding.

Motor frames and control enclosures shall be considered grounding through associated metallic conduit connections, but grounding jumpers shall be provided where necessary to assure effective grounding, particularly across flexible connections.

In general, conduit connections to outlets, junction boxes, pull boxes, cabinets and motor starting equipment shall have sufficient ground connection. Contractor shall draw up conduit connections tight and secure to insure proper continuity throughout conduit system.

At "wet" locations (toilet rooms, exterior receptacles, etc.) furnish and install a separate grounding wire for all devices and equipment.

MOTORS AND STARTERS:

All motors and motor starters shall be furnished by others (unless otherwise noted).

Where the starting equipment is of such type as to require a cut-off switch ahead of same, the cut-off switch shall be furnished by this contractor.

This contractor shall furnish and install all conduit and wire and make all final power connection for all systems, heating, ventilating, air conditioning and plumbing equipment, etc.

This contractor shall be responsible for correct motor connection, rotation and operation of control. He shall also be responsible to see that all thermal elements at motor starters, whether furnished by him or by others are of the proper sizes for the location and use intended before equipment is energized.

All final connections to motors shall be made through flexible conduit, minimum 24" in length to facilitate the removal or adjustment of the motor.

All motors and equipment connected through flexible conduits shall have the motor frames bonded to the rigid conduit system with a separate (green) grounding wire.

IDENTIFICATION NAMEPLATES:

This contractor shall furnish and install identification nameplates for all electrical service

equipment including disconnect, starters, panels, cabinet, pull boxes, etc., with its name and/or designation number or letter as shown on the drawings and with the voltage available within the panel.

Identification shall be in the form of laminated (black-white-black) micarta plastic nameplates. Nameplates shall be securely fastened to each piece of equipment by use of machine screws or epoxy adhesive.

Conductor tagging shall utilize wrap-around type labels for each feeder and each branch circuit wire in panelboards.

ACOUSTICAL PERFORMANCE:

In accordance with field instructions issued by the Architect, to assure that minimum noise is produced by the electrical work, check and tighten the fastenings of sheet metal plates, covers, doors and trims used in the enclosures of electrical equipment and remove and replace any individual device (e.g., discharge lamp ballast, transformer, dimmer, etc.) which is found to produce a sound energy output exceeding that of other identical devices installed at the project.

TELEPHONE SERVICE AND CONDUITS SYSTEM:

Telephones, switching equipment and all telephone cable shall be furnished and installed by others.

Extend 2" conduit from the telephone service entrance equipment outside of building as shown on drawings and as directed by the local telephone utility company. Terminate conduit 6" above floor in insulating bushing at equipment location.

Extend minimum 3/4" conduit from each telephone outlet as indicated on drawings. Outlet boxes and conduit shall be the same as specified for power and lighting. One-hole telephone plates shall be provided for all outlets to match the wiring device plates.

Coordinate all telephone conduit work with local telephone utility company before installing same.

Provide 120 volt receptacle adjacent to telephone service equipment, wired on a separate 20 amp. circuit.

FUSES:

All fuses shall be of the same manufacturer. Fuses shall be Bussman, dual element Type LPS-RK/LPS-RN or Hi-Cap as noted.

All fuses used for motors shall be protected by dual-element fuses at not in excess of 125% of the nameplate rating of the motor. Fuses 70 amperes and larger shall be of the current limiting dual-element type.

The contractor shall furnish to Owner, 10% (minimum of three) each size and type of all fuses installed.

Care shall be taken to fully insert all fuses into fuse holders and that bolts are properly tightened.

Electrical contractor shall furnish and install fuses in all fuseholders when equipment is ready to be energized. Electrical contractor shall replace those fuses burned out in testing and normal operation of the equipment.

GUARANTEE:

The electrical contractor shall guarantee all the new electrical work included in this contract for a period of one (1) year from the date of final acceptance. This guarantee shall include all labor and material to repair or replace any defective item or portions of the work for which the contractor is responsible as indicated in the foregoing specification and as shown on the plans.

END OF SECTION

**SECTION 16500
LIGHTING FIXTURES AND LAMPS**

LIGHTING FIXTURES AND LAMPS:

This Contractor shall provide and install all lighting fixtures indicated on the Drawings and all site lights, building exterior light fixtures, interior light fixtures and lamps.

Site light footings shall be provided by this Contractor.

END OF SECTION

**SECTION 16721
FIRE ALARM SYSTEMS**

PART 1 - GENERAL

SECTION INCLUDES:

Automatic smoke detectors.
Fire alarm signaling appliances.

REFERENCES:

Section 01400 - Quality Control: Requirements for references and standards.
NFPA 70 - National Electrical Code.
NFPA 72 - National Fire Alarm Code.
NFPA 101 - Life Safety Code.

SYSTEM DESCRIPTION:

Provide a complete and operational extension of the existing Notifier fire alarm system. Work of this section shall include all accessories and appurtenance required for a complete and operational system.

The existing system shall remain in operation during construction and shall be used by Owner for monitoring and protection of existing facilities. Contractor shall not interfere or cause interruption of the existing system during the performance of his work.

SUBMITTALS FOR REVIEW:

Section 01300 - Submittals: Procedures for submittals.

Product Data: Provide electrical characteristics and connection requirements.

Shop Drawings: Indicate annunciator layout and system wiring diagram showing each device and wiring connection required.

QUALITY ASSURANCE:

Conform to requirements of NFPA 70 and NFPA 101.

Manufacturer Qualifications: Company specializing in manufacturing the Products specified in

this section with minimum 5 years' experience and with service facilities within 100 miles of Project.

Fire Alarm Systems:

Installer Qualifications: Company specializing in installing the products specified in this section with minimum 5 years documented experience and certified by State of Indiana as fire alarm installer.

Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

PART 2 - PRODUCTS

MANUFACTURERS:

Notifier, Simplex or approved equal

INITIATING DEVICES:

Ceiling Mounted Smoke Detector: NFPA 72, photoelectric type with adjustable sensitivity, plug-in base, and visual indication of detector actuation, suitable for mounting on 4 inch outlet box.

SIGNALING APPLIANCES:

Audio Visual Device: NFPA 72 strobe lamp with flasher with red lettered "FIRE" on clear lens. Audio device shall match the existing audio devices in this wing of the hospital.

Alarm Lights: NFPA 72, strobe lamp and flasher with red lettered "FIRE" on clear lens.

FIRE ALARM WIRE AND CABLE:

Initiating Device and Indicating Appliance Circuits: Building wire as specified in Section 16123. Non-power limited fire-protective signaling cable, copper conductor, 150 volt insulation rated 60 degrees C. Power limited fire-protective signaling cable, copper conductor, 300 volts insulation rated 105 degrees C. Power limited fire-protective signaling cable classified for fire and smoke characteristics, copper conductor, 300 volts insulation rated 105 degrees C, suitable for use in air handling ducts, hollow spaces used as ducts, and plenums.

Fire alarm circuit conductors have insulation color or coded as follows:

Power Branch Circuit Conductors: Black and white.

Initiating Device Circuit: 2 - #14 red and blue.
Signal Device Circuit: 2 - # 14 AWG red and blue.

PART 3 - EXECUTION

INSTALLATION:

Install manual station with operating handle 48" above floor. Install audible and visual signal devices 7'-6" above floor.

Install 14 AWG minimum size conductors for fire alarm detection and signal circuit conductors in conduit.

Mount end-of-line device in control panel.

Install wiring for fire protection flow switch.

Mount outlet box for electric door holder to withstand 80 pounds pulling force.

Connect conduit and wire to door release devices, sprinkler flow switches, and sprinkler valve tamper switches.

Automatic Detector Installation: Conform to NFPA 72.

Install all wiring in conduit.

FIELD QUALITY CONTROL:

Test in accordance with NFPA 72 and local fire department requirements.

DEMONSTRATION AND INSTRUCTIONS:

Section 01700 - Contract Closeout: Demonstrating installed work.

Demonstrate normal and abnormal modes of operation and required responses to each.

END OF SECTION