PROJECT MANUAL

KENAI REC CENTER UPGRADES

SUBSTITUTION REQUESTS, FOR MANUFACTURES NOT SPECIFICALLY LISTED, SHALL BE SUBMITTED TO ARCHITECT, NO LATER THAN 10 DAYS PRIOR TO BID DATE, PER SECTION 01 63 00.

CITY OF KENAI
210 FIDALGO AVE.
KENAI, ALASKA 99611

K+A designstudios
ARCHITECTURE + PLANNING

SECTION 01 00 00

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SECTION 01 01 00 – SUMMARY OF WORK

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Work required under this contract is described in the subsequent sections and is more particularly delineated in the Drawings, and includes the providing of all labor, equipment, tools, and materials required for the KENAI REC CENTER UPGRADES as described in this and subsequent sections and in other Contract Documents.

2. The Contract Documents do not purport to describe in detail, absolute and complete construction information. In some instances, drawings will be diagrammatic and not necessarily to exact scale or portray exact conditions at any particular location or situation.

3. It shall be the responsibility of the Contractor to determine conditions and requirements at each particular situation and provide all items necessary for the completion of the Work, according to the parameters established by the Contract Documents.

B. Language:

The language employed in these specifications is addressed directly to the Contractor. Imperative or indicative language is generally employed throughout and requirements so expressed are the mandatory responsibility of the Contractor even though the work specified actually may be accomplished by specialty subcontractors hired, retained, or otherwise engaged by the Contractor. References to third parties in this regard shall not be interpreted in any way as to relieve the Contractor of any of his responsibilities under the Contract.

1.02 QUALITY ASSURANCE

A. Qualifications of workers:
For all the operations under this Contract:

1. Employ a thoroughly qualified and experienced superintendent who shall be completely familiar with the requirements of the Contract Documents, who shall direct all work, and who shall be present at the job site at all reasonable times while work is in progress.

2. Employ only qualified journeymen mechanics, tradesmen, or installers who are thoroughly skilled and experienced in their respective trades or specialties.

3. Apprentices and helpers, when employed, shall be under the supervision of qualified journeymen mechanics or tradesmen at all times.

B. Referenced Standards:

Standards referenced in this and succeeding sections of the specifications shall become a part of the Contract Documents to the extent of their applicability to the particular item, process, method or operation involved.

1.03 CONTRACTOR'S DUTIES

A. Except as otherwise specifically required, provide and pay for labor, materials, tools, machinery, equipment, and all transportation.

B. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities which bear on performance of the work.

C. In the event of any observed variation between the Contract Documents and legal requirements, or any discrepancy or ambiguity in or among any of the requirements of the Contract Documents or any referenced standards, promptly notify the Owner's Representative in writing in which eventuality, appropriate changes and modifications to the Contract Documents will be initiated by the Owner and furnished to the Contractor. Contractor shall assume responsibility for work performed without proper notice to Owner, when such work was known by Contractor to be contrary to such requirements. Do not proceed in questioned areas until resolution or clarification has been obtained.

1.04 PREMISES

A. Contractor's Access:

The Owner will make available at the indicated locations, exterior space, as reasonable, for the storage and staging of the Contractor's materials and equipment, subject to the following controls.

1. Use of such areas shall be covered by the insurance required by the General Conditions (Provisions).

2. Storage shall be maintained in a neat and orderly condition at all times conforming to all fire and safety regulations.

3. Fire lanes and required exit pathways shall be kept free and unobstructed at all times.

4. Do not unreasonably encumber site with materials and equipment.

5. Do not impose loads which might impair the structural integrity of any work already in place.

6. Use of the space shall be coordinated with and subject to the requirements of the Owner.

7. Upon completion of the contract, restore all areas to original conditions which prevailed prior to onset of the work, or as otherwise provided in the Contract Documents.

B. Environmental Requirements:

1. Restrict all operations to the areas assigned for storage, staging, and other necessary operations, and do not permit the disturbance of any areas not assigned for approved operations shown as limits of construction under this Contract.

2. The areas indicated on the drawings where existing natural vegetation remains is to be protected by the Contractor. The Contractor shall cordon-off these areas. They are not to be used by the Contractor for storage of materials, access of any other purpose. Damage

to the natural ground cover in these areas will be restored to the satisfaction of the Architect.

3. Employ all means necessary to avoid the accumulation of debris and construction residue, avoiding the spread of dust and noxious odors.

PART 2 PRODUCTS

2.01 STORAGE AND PROTECTION

Do not deliver any of the materials or equipment for this Contract to the job site until adequate facilities are available for their proper storage and protection. Comply with the detailed requirements in subsequent sections for the storage and protection of the particular products of those sections.

Take all measures necessary to protect the installed work and materials of all trades at all times before, during, and after installation.

2.02 MATERIALS AND EQUIPMENT

A. Design:

Design is based upon the method system, or product described, and the Drawings reflect the desired location and configuration. In some instances, the recommended installation details of the named manufacturer, comparable methods systems or products of alternate manufacturers will be considered (unless otherwise noted as "No Substitution") upon submittal per Sections 01 34 00 of these specifications.

B. Materials:

All materials proposed for incorporation into this project shall be new and as specified or as shown in the Drawings, or if not specifically called out, shall be of first quality of their respective kinds, as selected by the Contractor, subject to the approval of the Owner's Representative.

C. Minimum Quality:

In every instance the quality level shown or specified is intended as the minimum acceptable for the work to be performed or provided.

D. Conflicting or Overlapping Requirements:

In the event of conflict in or among any of the requirements of this specification or any referenced standards, or where two or more referenced standards or sets of requirements are specified, and establishes differing minimums of levels of quality, the most stringent requirement shall prevail and shall be so enforced, unless specific language in the text (not in the referenced standards) clearly indicates that the less stringent requirement is intended to prevail.

E. Submittals:

Make all submittals of materials and equipment proposed for incorporation into the Work in accordance with Section 01 34 00 and the specific requirements of other individual sections of these specifications.

PART 3 EXECUTION

3.01 JOB CONDITIONS

A. Inspection:

Do not commence any phase of the Work until all previous work has been examined and it has been determined that subsequent operations may be executed in a timely and orderly manner and in complete accordance with the original design, the approved submittals, and all applicable codes and regulations.

B. Installer's Certification:

Where directed in subsequent sections, obtain written certification from subcontractors or installers that substrates affecting their operations have been examined and found satisfactory for further work. Submittal of such certification, countersigned by the Contractor, shall be a condition for acceptance of that particular installation or phase of work.

C. Discrepancies:

In the event of discrepancy, ambiguity, conflict, interference, or any other unanticipated condition or situation which might impede timely execution of the Work, immediately notify the Owner's Representative and do not proceed in questioned areas until resolution or clarification has been obtained.

D. Repairs and Replacements:

In the event of damage to any part of any installed material, equipment, assembly, or system, make all repairs or replacements necessary to restore the original undamaged condition. Do not allow damaged material to be incorporated into the Work. Repairs and replacements shall be subject to the approval of the Owner's Representative and shall be accomplished at no additional expense to the Owner.

3.02 INSTALLATION

Install all work in complete accordance with the original design, the approved submittals, and all applicable codes and regulations. Perform all work under the direction of qualified supervisors, foremen, or leadmen, and do not permit any phase of the work to be commenced by subcontractors or subcontractors without qualified supervisors present to direct their operations.

3.03 GUARANTEES AND WARRANTIES

In addition to the requirements in the General Provisions, the Contractor shall extend to the Owner such other bond, warranty, or manufacturer's guarantee offered by any vendor, manufacturer, or other supplier on any material, goods, equipment, or workmanship included in the Work.

END OF SECTION 01 01 00

SECTION 01 02 70 – APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Application for Payment Procedures: Submit Application for Payment to the Owner's Representative in accordance with the schedule established by the General Conditions of the Contract and Agreement Between Owner and Contractor.

B. Related Documents and Sections Described Elsewhere:

1. Agreement Between Owner and Contractor.
2. General Conditions, "Measurement, Payment and Completion."
3. Section 01 37 00 - Schedule of Values
4. Section 01 70 00 - Contract Close-out Procedures

1.02 FORMAT AND DATA REQUIRED

A. Submit applications using AIA Document G702 or in a form acceptable to the Owner.

B. Provide itemized data on continuation sheet using AIA Document G703 or in a form acceptable to the Owner using the Schedule of Values accepted by the Owner's Representative.

1.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:

1. Fill in required information, including that for change orders executed prior to date of submittal of application.
2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

B. Continuation Sheets:

1. Fill in total list of scheduled component items of work with item number and scheduled dollar value for each item.
2. Fill in dollar value in each column for each scheduled line when work has been performed or products stored.
   a. Round off values to nearest dollar, or as specified for Schedule of Values.
3. List each change order executed prior to date of submission at the end of the continuation sheets.
   a. List by change order number and description, as for an original component item of work.

1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. Contractor shall submit suitable information, with a cover letter identifying:
   1. Project Name

2. Application number and date
3. Detailed list of enclosures
4. For stored products:

    a. Submit separate recap for all stored materials included in Application for Payment.

    b. All stored materials listed in recap shall be substantiated by invoices for the material and copies of the invoices shall be attached to the recap. If any stored materials are being claimed which are not stored in the construction site, itemized listing shall show location where materials are stored and such location shall be available for inspection of the materials. Contractor shall show proof of adequate insurance for material stored off-site. The Contractor shall request approval of any location for stored material, other than the construction site, prior to submittal of Application for Payment.

    c. Stored material prices shall include cost of material, related freight costs, and applicable taxes; all of which must be substantiated by invoice.

5. Provide completed forms for Payment Request and Proof of Payment for subcontractors and suppliers.

B. Submit one copy of data and cover letter with each copy of application.

C. A copy of each of the subcontractor and supplier request form and a stored materials form.

1.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01 70 00 - Contract Close-out Procedures.

1.06 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to Project Representative at the times stipulated in the General Condition.

B. Number: Three copies of each application.

C. When Owner's Representative finds application properly completed and correct, the Certificate for Payment will be transmitted to the Owner with copy of the transmittal letter.

PART 2 PRODUCTS (not used)
PART 3 EXECUTION (not used)

END OF SECTION 01 02 70

SECTION 01 03 00 ALTERNATES

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. The purpose of this section is to establish a method by which the Owner may adjust the extent of the project according to the prevailing costs at the time of proposing. Certain alternatives have been established as shown in the Drawings and described below to enable the Owner's decision to be made prior to award of the Contract.

2. The numbered order in which the deductive alternates appear is the order in which they may be added to the basic Proposal.

The Owner may take alternates in the order shown until at least one of the responsive proposals, results in a price within the funds announced as available.

This section takes precedence over all other descriptions of the work as described in PART 3, EXECUTION. Descriptions therein are not intended to be all inclusive, but to define in general terms each alternative item.

B. Related Work Described Elsewhere:

1. The Drawings and pertinent sections of these Technical Specifications describe the materials and methods required for and the limits of the various alternatives.

2. The method of stating the proposed Contract sum for each of the various alternatives is described in the Proposal Form.

1.02 SUBMITTALS

After the alternatives, (if any), have been selected and the Contract has been awarded, make submittals in accordance with Section 013400 of these specifications. Include all items in the selected alternative which may not have been included in the Basic Proposal. Submittal required by this section shall be made in addition to those provided for in Section 013400 and subsequent sections.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 HANDLING

If the Owner elects to proceed on the basis of one or more of the alternatives, make all modifications required, including the provision of all materials and labor necessary to perform the work according to the parameters described in the selected alternative(s) and shown in the Drawings. The contractor shall have approval of the Owner's Representative with no additional cost to the Owner other than as proposed in the Proposal Form and included in the Contract amount.

3.02 DESCRIPTION OF ALTERNATES

Additive Alternate No. 1: Cost to provide all labor, materials and equipment required to demolish and replace RTU-1 and associated gas piping, as called for in the drawings and specifications.

Additive Alternate No. 2: Cost to provide all labor, materials and equipment required to demolish and replace RTU-6 and associated gas piping, as called for in the drawings and specifications.

END OF SECTION

SECTION 01 04 50 – CUTTING AND PATCHING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Cutting, fitting and patching required to complete the work and to:

a. Accommodate coordination of the Work.
b. Provide for installation of other work.
c. Remove and replace defective work.
d. Remove and replace work not conforming to requirements of Contract Documents.
e. Uncover other work for access or inspection.
f. Obtain samples for testing or similar purposes.
g. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
h. Uncover portions of the work to provide for installation of ill-timed work.

2. Cutting and patching also includes, but is not limited to, cutting and patching of nominally completed and previously existing work, and is defined to exclude integral cutting and patching during manufacturing, fabricating, erecting, and installation process for individual units of work.

B. Related Sections:

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

1.02 SUBMITTALS

A. Submit written request to Owner's Representative well in advance of executing cutting or alteration which affects:

1. Work of Owner or separate contractor.
2. Structural value or integrity of element of Project.
3. Integrity of effectiveness of weather exposed or moisture resistant elements or systems.
4. Efficiency, operating life, maintenance or safety of operating elements.
5. Visual qualities of sight exposed elements.

B. Request shall include:

1. Project identification.
2. Description of affected work.
3. Necessity for cutting.
4. Effect on other work, or structural integrity of project.
5. Description of proposed work. Designate:
   a. Scope of cutting and patching
   b. Contractor and trades to execute work

c. Products proposed for use
d. Extent of refinishing

6. Alternatives to cutting and patching
7. Designation of party responsible for cost of cutting and patching.

C. Should conditions of work or schedule indicate change of materials or methods, submit written recommendation to Owner's Representative including:

1. Conditions indicating change.
2. Recommendations for alternative materials or methods.
3. Submittals as required for substitutions.
4. Time involved and impact to other on-going activities.
5. Cost involved.
6. Time work will be accomplished to provide for Owner's Representative's observations.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 JOB CONDITIONS

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by cutting and patching operations, to such acceptable or approved condition. Return adjacent areas to condition existing prior to start of work.

3.02 VISUAL REQUIREMENTS

A. Do not cut and patch work exposed on exterior of building in manner resulting in reduction of visual qualities or resulting in evidence of cut and patch work. Remove and replace cut and patched work judged by Owner's Representative to be visually unacceptable.

B. Work includes, but is not limited to, items of woodwork, paneling, drywall, wall finishing, finished flooring, and ceilings.

3.03 MATERIALS

A. For replacement of work removed, comply with Specifications for type of work to be done, unless otherwise noted.

B. Provide materials for cutting and patching which will result in equal to or better work being cut and patched in terms of performance characteristics and visual effect where applicable.

3.04 INSPECTION

A. Inspect existing conditions of work including elements subject to movement or damage during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of new products.

3.05 PREPARATION PRIOR TO CUTTING

A. Provide shoring, bracing, and support as required to maintain structural integrity of Project.

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

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

3.06 PERFORMANCE

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

B. Execute fitting and adjustment of products to provide finished installation to comply with specified products, functions, tolerances and finishes.

C. Execute cutting and demolition by methods which will prevent damage to other work and provide proper surfaces to receive installation of repairs and new work.

D. Restore work which has been cut or removed. Install new products to provide completed work in accord with requirements of Contract Documents.

E. Do not cut and patch structural work in manner resulting in reduction of:
1. Load carrying capacity.
2. Load/deflection ratio.

F. Refinish entire surface as necessary to provide even finish.
1. Refinish continuous surfaces to nearest intersection.
2. Refinish entire unit of an assembly.

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

H. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work. Where feasible, inspect and test patched areas to demonstrate integrity of work.

I. Restore exposed finishes of patched area and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.

END OF SECTION 01 04 50

SECTION 01 05 20 – GRADES, LINES AND LEVELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Property lines, bench marks, existing and proposed grades, and improvements are indicated on Drawings.

B. Lay out Work and provide lines and measurements for the Work.

1. Verify adjustments required due to existing improvements, adjoining property rights, good appearance, and proper drainage.

C. Take necessary measurements as far in advance of required installation as practical. Verify measurements given on Drawings.

1. Report promptly variations and discrepancies to Owner's Representative.
2. Verify incomplete or non-closing dimensions with Owner's Representative.

D. Dimensions on Drawings take precedence over scaled dimension. Where dimensions are not given, scaled dimensions to nearest point of reference may be used subject to verification of Owner's Representative.

1.02 SURVEYS, LINES AND LEVELS

A. Provide services of a registered civil engineer or registered land surveyor with a minimum of 5 years' experience in Alaska, acceptable to Owner's Representative and licensed in the State of Alaska, to lay out work.

1. Establish interior and exterior construction and control lines.
2. Set grades using:
   a. Grade stakes
   b. Slope stakes
   c. Finish grade stakes

B. Provide all layout and construction lines and grade staking required for type of work being performed according to normal engineering procedures.

C. Maintain construction lines and grade staking in condition to assure accurate and proper control of work and to verify final grades and construction lines.

1. Establish and safeguard additional bench marks in at least two widely separated places.
2. Establish axis lines showing exact floor elevations and other lines, dimensions and reference points as required for information and guidance of all trades.

1.03 SUBMITTALS

A. Take settlement readings of work, unless waived by owner.

1. At predetermined number of points selected by Owner's Representative.
2. Weekly until work is completed or until such time as directed.

B. Record all survey data and make available to Owner's Representative.

C. Submit certificate signed by registered engineer or surveyor certifying elevations and improvements are in conformance with requirements of Contract Documents.

1. Describe in detail and indicate on Project Record Documents all variation from Contract Documents.
2. Include field survey notes starting date, name of surveyor or foremen, and adequate description of temporary bench marks when used.
    a) Orient sketches with north arrow and show relationship and ties to stationing control.
    b) Reduce notes to show actual elevations at design datum.
3. Base horizontal control, for Project Record Documents information, on stationing system shown. Use design datum for all elevations.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01 05 20

SECTION 01 06 00 – REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 BUILDING CODES

A. Construction which is not governed by a local building code or the Contract Documents will be governed by the more stringent provisions of the latest published, Statute adopted edition, of the following applicable codes:

2012 International Building Code
2014 National Electrical Code
2012 International Plumbing Code
2012 International Mechanical Code
2012 International Fire Code
2012 International Energy Conservation Code
2012 International Fuel Gas Code Chapters 6 & 7
Americans with Disabilities Act (ADA)
Accessibility Guidelines for Buildings and Facilities
NFPA 13, 70, 72, 101, 110, 415 and 780

B. Construction Type: VB

C. Occupancy Type: B

1.02 APPLICABLE STANDARDS

A. Where indicated, comply with requirements and recommendations of referenced standards and other publications, except to extent more detailed or more stringent provisions are required by applicable codes and governing regulations.

B. Where two or more standards or recommendations of trade associations apply to same quality control requirement for work, comply with most stringent. Refer uncertain instances to Owner's Representative.

1.03 FEES AND PERMITS

A. Comply with requirements of Contract General Conditions and Supplementary Conditions.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 06 00

SECTION 01 09 00 – REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Quality assurance

B. Schedule of references

1.02 RELATED SECTIONS

A. General Conditions

1.03 QUALITY ASSURANCE

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. The date of the standard is that in effect as of the Bid date, except when a specific date is specified.

C. Obtain copies of standards when required by Contract Documents.

D. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Owner's Representative before proceeding.

F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.04 SCHEDULE OF REFERENCES

AA	Aluminum Association 818 Connecticut Avenue, NW Washington, DC 20006
AABC	Associated Air Balance Council 1000 Vermont Avenue, NW Washington, DC 20005
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, NW Washington, DC 20001
ACI	American Concrete Institute Box 19150

	Reford Station Detroit, MI 48219
ADC	Air Diffusion Council 230 North Michigan Avenue Chicago, IL 60601
AGC	Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740
AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC 20006
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611
AISI	American Iron and Steel Institute 1101 17 Street, N.W Washington, DC 20036
AITC	American Institute of Timber Construction 333 W. Hampden Avenue Englewood, CO 80110
AMCO	Air Movement and Control Association 30 West University Drive Arlington Heights, IL 60004
ANSI	American National Standards Institute 11 W. 42st New York, NY 10036
APA	American Plywood Association Box 11700 Tacoma, WA 98411
ARI	Air-Conditioning and Refrigeration Institute 1501 Wilson Boulevard Arlington, VA 22209
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329

ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, VA 22206
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, MD 20014
AWS	American Welding Society 550 LeJune Road, NW Miami, FL 33135
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60195
DHI	Door and Hardware Institute 7711 Old Springhouse Road McLean, VA 22102
FGMA	Flat Glass Marketing Association 3310 Harrison White Lakes Professional Building Topeka, KS 66611
FM	Factory Mutual System 1151 Boston-Providence Turnpike PO Box 688 Norwood, MA 02062
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section Washington Navy Yard, Bldg. 197 Washington, DC 20407
GA	Gypsum Association 810 First St. N.E. Suite 510 Washington D.C. 20002
IAS	International Accreditation Service

	3060 Saturn Street, Suite 100 Brea, California 92821
ICBO	International Conference of Building Officials 5360 S. Workman Mill Road Whittier, CA 90601
IEEE	Institute of Electrical and Electronics Engineers 345 East 47th Street New York, NY 10017
IMIAC	International Masonry Industry All-Weather Council International Masonry Institute 815 15 th Street, NW Washington, DC 20005
MBMA	Metal Building Manufacturers Association 1300 Sumner Avenue Cleveland, Ohio 44115
MIL	Military Specification Navel Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
NAAMM	National Association of Architectural Metal Manufacturers 221 North LaSalle Street Chicago, IL 60601
NCMA	National Concrete Masonry Association 2302 Horse Pen Road Herndon, VA 22071
NEBB	National Environmental Balancing Bureau 8224 Old Courthouse Road Vienna, VA 22180
NEMA	National Electrical Manufacturers' Association 2101 L Street, NW Washington, DC 20037
NFPA	National Fire Protection Association 1 Battery March Park Quincy, MA 02269
NFPA	National Forest Products Association 1250 Connecticut Ave, N.W. #200 Washington, DC 20036
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077

PS	Product Standard US Department of Commerce Washington, DC 20203
SDI	Steel Deck Institute PO Box 9506 Canton, OH 44711
SDI	Steel Door Institute 712 Lakewood Center North 14600 Detroit Avenue Cleveland, OH 44107
SIGMA	Sealed Insulating Glass Manufacturers Association 111 East Wacker Driver Chicago, IL 60601
SMACNA	Sheet Metal and Air Conditioning Contractors' National Assoc. 8224 Old Court House Road Vienna, VA 22180
SSPC	Steel Structures Painting Council 4400 Fifth Avenue Pittsburgh, PA 15213
TCA	Tile Council of America, Inc. Box 326 Princeton, NJ 08540
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062
WCLB	West Coast Lumber Inspection Bureau 6980 SW Varns Road Box 23145 Portland, OR 97223
WWPA	Western Wood Products Association 1500 Yeon Building Portland, OR 97204

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 09 00

SECTION 01 20 00 – PROJECT MEETINGS

PART 1 GENERAL

1.01 DESCRIPTION

A. Owner's Representative shall conduct Preconstruction Conference and close out review meetings. Contractor is to assure orderly review during progress of work and to assure systematic discussion of problems and will conduct all project meetings throughout the construction period. These will include:

1. Weekly progress review meeting which will include Owner's Representative, and Superintendent, and any necessary Subcontractors.
2. First of Month meetings which will include Architect, responsible sub-consultants for respective agenda items Superintendent, and Owner's Representative. At this meeting the request for payment shall be submitted for approval. Also, at this meeting the Contractor shall show current as-built drawings for approval prior to the pay period payment.

B. Owner's Representative, Architect and consultants, project inspectors, and testing personnel will attend as needed.

C. Related Sections:

1. Section 01 31 10 Scheduling
2. Section 01 34 00 Shop Drawings, Product Data, and Samples
3. Section 01 70 00 Contract Close-out Procedures
4. Individual Specification Sections

D. Contractor's discussions with subcontractors and materials suppliers are Contractor's responsibility and normally are not part of project meetings content.

1.02 QUALITY ASSURANCE

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit Contractor to solutions agreed upon in project meetings.

1.03 SUBMITTALS

A. Agenda Items: To the maximum extent practicable, advise Owner's Representative at least 24 hours in advance of project meetings regarding items to be on agenda.

B. Contractor shall compile minutes of each project meeting, furnishing copies to Owner's Representative and Architect within seven days of each meeting.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 MEETING SCHEDULE

A. Except as noted below for Preconstruction meeting, project meetings will be held weekly.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.02 MEETING LOCATION

A. Owner's Representative will establish meeting location.

3.03 PRECONSTRUCTION MEETING

A. Preconstruction Meeting will be scheduled to be held within 15 working days after Owner's Representative has issued the Notice to Proceed.

1. In addition to Contractor, representatives of sitework, mechanical, electrical and other major subcontractors shall attend.

2. Contractor shall notify other interested parties and request their attendance.

3. Preconstruction meeting will be held in the Owner's Representative's office.

B. Minimum agenda: Data shall be distributed and discussed on at least the following items:

1. Organizational arrangement of Contractor's forces and personnel, those of subcontractors, materials suppliers, Architect and consultants.

2. Channels and procedures for communication.

3. Construction Schedule, including sequence of critical work. Review materials that might require long lead times, etc.

4. Contract Documents, including distribution of required copies of original documents and revisions.

5. Processing of shop drawings and other data submitted to Owner's Representative for review.

6. Processing of Bulletins, field decisions, and change orders.

7. Rules and regulations governing performance of Work.

8. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.

9. Processing of payment requests.

10. Preliminary discussions of future close-out procedures.

3.04 PROJECT MEETINGS

A. Attendance:

1. As much as possible, assign the same person or persons to represent the Contractor at project meetings throughout progress of Work.

2. Subcontractor, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observation, problems and decisions.
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

3.05 CONTRACTOR'S MEETINGS

A. Conduct meetings with his own forces, subcontractors and suppliers as is required in individual specifications sections.

B. Notify Owner's Representative in writing of any impending meetings for which the Owner's Representative's input is needed.

C. Provide written notice a minimum of two weeks prior to meeting date and include meeting topic, agenda, location, time and list of expected attendees.

D. Take meeting minutes and provide copies to Owner's Representative within 3 calendar days after meeting.

3.06 CLOSE-OUT MEETINGS

A. Review Section 01 70 00 regarding Contract Close-out Procedures. Approximately two months prior to Substantial Completion, weekly Project Meetings will include discussion of close-out activities.

B. Contractor is responsible to invite subcontractors as necessary to review related close-out work.

END OF SECTION 01 20 00

SECTION 01 25 00 – DEFINITIONS AND EXPLANATIONS

PART 1 GENERAL

1.01 DESCRIPTION

A. Explanation:

This section of the General Requirements defines certain terms used in the specifications and explains the language, format, and certain conventions used in the Project Manual and associated Contract Documents.

B. Related Documents:

Other contract documents directly related to and in some way modified or governed by the General Requirements Division include, but are not necessarily limited to, the following:

1. General Provisions
2. Supplementary Conditions
3. Technical Specifications Sections

C. Limitations of Scope:

The definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the Work to the extent such definitions or explanations are not stated more explicitly in other parts of the Contract Documents.

1.02 DEFINITIONS

A. General:

A substantial amount of the specification language constitutes specific definitions for terms found in the other Contract Documents, including the Drawings which must be recognized as diagrammatic and quantitative in nature and not completely descriptive of the requirements indicated. Certain terms used repetitiously in the Contract Documents are defined generally as follows:

1. Contract Documents:

The Contract Documents consist of the Owner-Contractor Agreement, the Conditions (Provisions) of the Contract (General, Supplementary, & other Conditions), the Drawings, the Specifications and all Addenda issued prior to and all Modifications issued after execution of the Contract.

2. Project Manual:

The Project Manual is a bound volume or volumes, containing the Bidding Requirements and the Contract Documents, (except Drawings, Addenda, and Change Orders).

3. General Requirement:

   The Provisions or Requirements of Division 1 sections and the General Requirements apply to the entire Work of the Contract, and where so indicated, to other elements of Work which are included in the project.

4. Work (capitalized, noun):

   The Work comprises the completed construction required by the Contract Documents and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

5. work (uncapitalized, verb or noun):

   Refers to effort or accomplishment.

6. Indicated:

   A cross reference to details, notes, or schedules on the drawings, other paragraphs or schedules in the specifications, and similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled", or "specified" are used in lieu of "indicated", it is for the purpose of helping the reader locate the reference, and no limitation of location is intended except as specifically noted.

7. Directed, Requested, Authorized, Selected, Approved:

   Unless otherwise explained, shall imply: "Directed by the Owner's Representative....Authorized by the Owner's Representative", etc. However, no such implied meaning shall be interpreted as to extend the responsibility of the Owner's Representative into the field of responsibility of the Contractor under the Contract.

8. Refer:

   Used to indicate that the subject is defined or specified in further detail at another location in the Contract Documents, or elsewhere as indicated. It shall not be interpreted to require the Contractor to procure, subcontract, or purchase the subject work in any specific manner.

9. Approve:

   Where used in conjunction with the response of the Owner's Representative (Contracting Agency) to submittals, requests, applications, inquiries, reports, and claims by the contractor, the meaning shall be held to the limitations of the responsibilities and duties of the Owner's Representative. In no case shall it be interpreted as a release of the Contractor from responsibility to fulfill the requirements of the Contract Documents.

10. Project Site, Jobsite:

    The location of and the space available and assigned to the Contractor for the performance of the Work. The extent of the Project Site is shown in the Drawings and may or may not correspond with the legal description of the land upon which the project is to be built.

11. Shall/Must/Will:

"Shall" is used generally to indicate a direct indicative requirement. Where encountered, "must" shall be interpreted to mean the same as "shall" and neither is to be interpreted to require more or less stringent compliance than the other.

"Will", where encountered in relation to acts or responsibilities of the Contractor, shall be accorded the same meaning as "shall".

12. Furnish:

    Used to mean the procurement, delivery to the project site, unloaded, and ready for unpacking, assembly, erection, or installation, as applicable in each instance.

13. Install:

    Used to describe operations at the project site including unpacking, assembly, erection, installation, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations, as applicable in each instance.

14. Provide:

    Means Furnish and Install, complete and ready for the intended use, as applicable in each instance.

15. Installer:

    The entity (person or firm) engaged by the Contractor, his subcontractor, or sub-subcontractor for the performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement and understanding that such entities (installers) shall be expert in the operations they are engaged to perform.

16. Shop Drawings:

    All drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by the Contractor, his subcontractors, suppliers, or the manufacturers of the products, which illustrate how specific products, assemblies, or systems are fabricated or installed into the Work.

17. Architect, Architect/Engineer:

    Generally used interchangeably to denote the professional consultant retained by the Owner to design the project and prepare the Contract Documents; but also for consultation during administration of the Contract, interpretation of Contract Documents, review and evaluation of materials and methods, and general observation of the progress of the Work. The Architect shall provide construction administration and will be the primary contact for the contractor.

18. Owner's Representative:

The designated representative of the Owner during the construction period to administer the Contract, interpret Contract Documents, review and evaluate materials and methods, and observe and evaluate the progress of the Work. The Owner's Representative has final approval on construction administration decisions.

1.03 EXPLANATION

A. General:

This series of explanations is provided to assist the user of these specifications and associated Contract Documents to more readily understand the format, language, implied requirements and similar conventions of the content. None of these explanations shall be interpreted to modify the substance of the specified requirements.

B. Specification Production:

Portions of these specifications have been produced by editing master specifications and may contain minor inconsistencies. Such deviations are a normal result of this production technique, and no other meaning shall be implied or permitted.

C. Format:

The format of principal portions of these specifications can be generally described as follows, although other portions may not fully comply and no particular significance shall be attached to such compliance or non-compliance:

1. For convenience, the basic unit of specification text is a "Section", each unit of which is named and numbered. Sections are organized into related families of sections termed "Divisions", which are recognized as the present industry consensus on uniform organization and sequencing of construction specifications.

2. The section title is not intended to limit the meaning or content of the section, nor to be fully descriptive of the requirements specified therein, nor to be an integral part of the text. The Section identification is contained in the footer at the bottom of the page.

D. Page Numbering:

1. Pages are numbered independently and sequentially within each section. A new sequence of numbers begins with the beginning of each new Section and is located in the right-hand side of the footer on each page.

E. The Three Part Section:

Generally, each section of the specification has been subdivided into three (3) "parts" for uniformity and convenience. They are:

PART 1 GENERAL
PART 2 PRODUCTS
PART 3 EXECUTION

In the event additional parts are required for tables, schedules, etc. they will be added in the form of:

PART 4 APPENDIX

These parts do not limit the meaning of, and are not an integral part of, the text which specifies requirements. In some instances one or the other of these parts may not be used in which case it will be so noted as "not used."

F. Language:

Direct imperative language is used generally throughout the specifications, and requirements so expressed are the responsibility of the Contractor, even though the work specified actually may be accomplished by specialty subcontractors hired, retained, or otherwise engaged by the Contractor. Any references to third parties in this regard, shall not be interpreted in any way as to relieve the Contractor of any of his responsibilities under the contractor.

G. Specification Types:

The techniques or types of specification used to record the requirements varies throughout the text, and may include types commonly recognized as "prescriptive," "generic descriptive," "compliance with standards (reference)," "performance," "open," "open multi-product," "closed single product," "proprietary," or a combination of these.

H. Trades, Names:

The use of trade titles such as "carpentry," and degrees of expertise such as "journeyman (men)," implies neither that the work is required to be performed by that specific trade, nor that the level of expertise indicated is recognized as peculiar to membership or nonmembership in any trade or industry association or organization, nor that the specified requirements apply exclusively to work by tradesmen of that corresponding generic name.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 25 00

SECTION 01 31 10 – SCHEDULING

PART 1 GENERAL

1.01 DESCRIPTION

A. To assure adequate planning and execution of the Work so that the Work is completed prior to the completion date stipulated in the Contract, and to assist the Owner's Representative in appraising the reasonableness of the proposed schedule and in evaluating progress of the Work, prepare a project schedule using the Critical Path Method.

B. Requirements for progress schedule: General Conditions.

C. Construction period: Form of Agreement

D. Definitions:
1. "Day", as used throughout the Contract unless otherwise stated, means "calendar day".

1.02 SECTION INCLUDES

A. References
B. Quality Assurance
C. Format
D. Schedules
E. Submittals
F. Review and evaluation
G. Updating Schedules
H. Distribution

1.03 RELATED SECTIONS

A. General Conditions
B. Supplementary Conditions
C. Section 01 02 70 Application for Payment Procedures
D. Section 01 20 00 Project Meetings
E. Section 01 34 00 Shop Drawings, Project Data, and Samples
F. Section 01 37 00 Schedule of Values

1.04 REFERENCES

A. "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry", The Associated General Contractors of America (AGC), Washington, D.C., 1976 edition.

B. "CPM in Construction Management - Project Management with CPM", James O'Brien, McGraw-Hill Book Company, New York, NY 1984, third edition.

1.05 QUALITY ASSURANCE

A. A statement of CPM capability shall be submitted in writing prior to the award of the contract and will verify that either the contractor's organization has "in-house capability" qualified to use the Microsoft Project or that the contractor employs a consultant (firm) which is so qualified.

1.06 FORMAT

A. Listing: Reading from left to right, in ascending order for each activity. Identify each activity with the applicable Specification section number.

B. Diagram Sheet Size: Adequate for clear reading.

C. Scale and Spacing: To allow for notations and revisions.

1.07 SCHEDULES

A. Prepare the Critical Path Schedule, under concepts and methods outlined in the references list in Article 1.04 above. Show information in such detail that duration times of activities will range normally from one to 15 calendar days.

B. Illustrate complete sequence of construction by activity, identifying work of separate areas. Provide dates for submittals, including those for Owner furnished items, and return of submittals; dates for procurement and delivery of products; and dates for installation of provision for testing. Provide legend for symbols and abbreviations used.

C. Actual start date
1. Actual finish date
2. Latest start date
3. Latest finish date
4. Total and free float
5. Monetary value of activity, keyed to Schedule of Values
6. Percentage of activity completed
7. Responsibility

D. Analysis Program Microsoft Project: Capable of compiling monetary value of completed and partially completed activities, of accepting revised completion dates, and recomputation of all dates and float.

F. Coordinate contents with Schedule of Values in Section 01 37 00.

1.08 SUBMITTALS

A. Within 10 days after date established in Notice to Proceed, submit proposed preliminary critical path schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. Submittal of preliminary schedule shall occur prior to review and payment of any pay requests.

C. Participate in review of preliminary and complete schedule jointly with Owner's Representative.

D. Within 20 days after joint review of proposed preliminary schedule, submit draft of proposed complete project schedule for review. Include written certification that major Subcontractors have reviewed and accepted proposed schedule.

E. Within 10 days after joint review, submit complete critical path schedule to final acceptance of work.

F. Submit updated schedules with each Application for Payment.

G. Submit 1 Compact Disc with file saved as MS Project format. Include updates on CD also.

1.09 REVIEW AND EVALUATION

A. Participate in joint review and evaluation of schedule with Owner's Representative at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

1.10 UPDATING SCHEDULES

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity. Update diagrams to graphically depict current status of Work.

C. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

D. Indicate changes required to maintain Date of Substantial Completion.

E. Submit sorts required to support recommended changes.

F. Provide narrative report to define problem area, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

1.11 DISTRIBUTION

A. Following joint review, distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, and Owner's Representative.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown on Schedules.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 31 10

SECTION 01 34 00 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Procedures for submittals.

B. Related Work Described Elsewhere:

1.	General Conditions:	
2.	Scheduling:	Section 01 31 10
3.	Quality Control:	Section 01 40 00
4.	Product Options and Substitutions:	Section 01 63 00
5.	Project Record Documents:	Section 01 72 00
6.	Operation and Maintenance Data:	Section 01 73 00

1.02 SHOP DRAWINGS

A. Present in a clear and thorough manner. Title each drawing with Project name and number; identify each element of drawings by reference to sheet number and detail, schedule, or room number of Contract Documents.

B. Identify field dimensions; show relation to adjacent or critical features or Work or products.

C. Sheet Size:
1. Minimum: 8 1/2 x 11 in.
2. Maximum: 30 x 42 in.
3. In between: Modules of approximately 8 1/2 x 11 in.

D. Scale and measurements: Make shop drawing accurately to a scale large enough to show pertinent parts of item and method of connection to Work.

E. Shop drawings include fabrication, erection and setting drawings, schedule drawings, manufacturer's scale drawings, wiring and control diagrams, cuts or entire catalogs, pamphlets, descriptive literature, performance and test data.

F. Check drawings and schedules, coordinate them with work of trades involved before submission and indicate their approval.

G. Identify details by reference to sheet and detail, schedule or room numbers shown on Drawings.

1.03 PRODUCT DATA

A. Submit product data when required by individual Specification Section.

1. Products which are specified in individual Specification Sections or on Drawings by manufacturer's name and complete product number do not require submittal or product data.

2. Supply products specified. Indicate on Submittal Schedule manufacturer's name and complete product number of product to be supplied, and reference Specification Section and Article number and Drawings and detail number.

B. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.

C. Modify manufacturers' standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work. Delete information not applicable.

1.04 SAMPLES

A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating; colors, textures, patterns, for selection. No color selection shall be made until all items needing color selection have been submitted.

Whenever color is specified "as selected", submit actual material color samples for Architect's selection.

B. Submit samples to illustrate functional characteristics of products, including parts and attachments.

C. Label each sample with identification required for transmittal letter.

D. Provide field samples of finishes at Project, at location acceptable to Owner's Representative, as required by individual Specifications section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed work.

1.05 MANUFACTURER'S INSTRUCTIONS

A. Manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing, and finishing.

1.06 CERTIFICATES OF COMPLIANCE

A. Execute certificates of compliance for specified materials in three copies. Sign certificates by an authorized official of manufacturing company, and list name and address of Contractor, Project name and location, and quantity and date of shipment. List name and address of testing laboratory and date of tests on copies of lab test reports submitted with certificates.

1.07 CONTRACTOR REVIEW

A. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirement of Contract Documents.

B. Coordinate submittals with requirements of Work and of Contract Documents.

C. Apply Contractor's review stamp, signed or initialed certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with

requirements of Work and Contract Documents, for each sheet of shop drawings, manufacturer's installation instructions and product data, and label each sample to certify compliance with requirements of Contract Documents. Notify in writing at time of submittal, of any deviations from requirements of Contract Documents, with brief explanation describing deviation.

D. Do not fabricate products or begin work which requires submittals until return of submittal with acceptance.

E. It is the Contractor's responsibility to coordinate and verify field conditions, with approved shop drawings, prior to construction, in areas requiring shop drawings.

1.08 SUBMITTAL REQUIREMENTS

A. Submittal Schedule: Within thirty days from receipt of Notice to Proceed, submit two copies of schedule of submittals requiring review to Owner's Representative.

1. Include such items as shop drawings, product data, certificates of compliance, and material samples.
2. Indicate type of item, requirement reference, and submittal dates.
3. Allow 10 calendar days for Owner's Representative's review.
4. Submittals not required will not be reviewed by Architect.

B. Transmit submittals in accordance with approved progress schedule and in such sequence to avoid delay in the Work or work of other contracts.

1. Transmit far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.
2. For shop drawing submittal, schedule shall provide for maximum of 10 shop drawings per calendar week to be submitted for review for each of the mechanical, electrical, structural and architectural disciplines.

C. Submittals shall be delivered to Owner’s Representative’s Office.

D. Transmit submittals in groups containing all information required for complete review.
1. Partial, incomplete submittals will be rejected.

E. Provide 8 x 4 in. blank space on each submittal for Contractor's and Owner's Representative’s stamp.

F. Coordinate submittals into logical grouping to facilitate interrelation of the several items:
1. Finishes which involve selection of colors, textures, or patterns.
2. Associated items which require correlation for efficient function or for installation.

G. PDF files of shop drawings are acceptable.

H. Submit number of copies of product data and manufacturer's instructions Contractor requires, plus four copies which will be retained by Owner's Representative (two copies) and his consultants (two copies).

I. Submit number of samples specified in individual Specifications Sections.

J. Submit under accepted form of transmittal letter. Identify Project by title and number. Identify Work and product by Specifications section and Article number.

K. Maintain submittal log showing status of submittals, make available for Owner's Representative's review upon request.

1.09 RESUBMITTALS

A. Make resubmittals under procedures specified for initial submittals; identify changes made since previous submittal.

1.10 DISTRIBUTION

A. Pick up reviewed copies of submittals at Owner’s Representative’s office when notified.

B. Duplicate and distribute reproductions of shop drawings, copies of product data, and samples, which bear stamp of approval, to job site file, Record Documents file, Owner's Representative (2 copies), subcontractors, suppliers, and other entities requiring information.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 34 00

SECTION 01 37 00 – SCHEDULE OF VALUES

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Breakdown of Contract Sum showing values allocated to each of various parts of Work, as specified here and in other provisions of the Contract Documents.
2. Schedule of values shall be compatible with "continuation sheet" accompanying applications for payment.

B. Related Work Described Elsewhere:
1. General Conditions:
2. Supplementary Conditions
3. Sections in Division 1 of this Specification.

1.02 QUALITY ASSURANCE

A. Use required means to assure arithmetical accuracy of sums described.
B. When required by Owner's Representative, provide copies of subcontractors or other acceptable data substantiating sums described.

1.03 SUBMITTALS

A. Submit to Owner's Representative a Schedule of Values for Contractor's Work and subcontracted work in each applicable Section of Specifications, Division 2 through 33 inclusive, within ten days after Notice to Proceed.

B. Upon Owner's Representative's request, support values with data substantiating correctness.

C. Schedule of Values, unless objected to by Owner's Representative, shall be used only as basis for Contractor's Applications for Payment.

D. Meet with Owner's Representative's and determine additional information, if any, required to be submitted.

E. Secure the Owner Representative's approval of the schedule of values prior to submitting first application for payment.

1.04 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Type schedule on 8 1/2 x 11 in. white paper, Contractor's standard forms and automated printout will be considered for acceptance by Owner's Representative upon Contractor's request. Include emailing to Owner and Architect file saved to MS Excel format. Identify schedule with:

1. Project title and location.
2. Name and Address of Contractor.

3. Date of Submission

B. List installed value of component parts of Work in sufficient detail to serve as basis for computing values for progress payments during construction.

C. Follow Table of Contents as format for listing component item:

1. Identify each line item with number and title of respective Section of Specifications.

D. Under each major item list sub-values of major products or operations.

1. Each line item shall include directly proportional amount of Contractor's overhead and profit.

2. For items on which progress payments will be requested for stored materials, breakdown values into:

a. Cost of materials, delivered and unloaded, with taxes paid.
b. Total installed value.

E. Sum of values listed in schedule shall equal total Contract Sum.

1.05 SUB-SCHEDULE OF UNIT MATERIAL VALUES

A. Submit sub-schedule of unit costs and quantities for products on which progress payments will be requested for stored products.

B. Form of submittal shall parallel Schedule of Values, with each item identified same as line item in Schedule of Values.

C. Unit quantity for bulk materials shall include allowance for normal waste.

D. Break unit values for material down into:

1. Cost of material, delivered and unloaded at Site, with taxes paid.
2. Installation costs, including Contractor's overhead and profit.

E. Installed unit value multiplied by quantity listed shall equal cost of item in Schedule of Values.

F. Materials incorrectly stored at the jobsite are subject to damage and may not be included in progress payments as determined by the Owner's Representative.

G. The contract sum identified on the schedule of values as “Final” shall be based on the contract award and in an amount as found in the general conditions.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 37 00

SECTION 01 40 00 – QUALITY CONTROL

PART 1 GENERAL

1.01 DESCRIPTION

A. All material and workmanship shall be subject to inspection, examination, and test by the Owner's Representative at any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction are carried on. The Owner's Representative shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected material shall be satisfactorily replaced with proper material without charge therefor, and the Contractor shall promptly segregate and remove rejected material from the premises. If the Contractor fails to proceed at once with replacement of rejected material and/or correction of defective workmanship, the Owner's Representative may, by contract or otherwise, replace such material and/or correct such workmanship and charge the cost thereof to the Contractor, or may terminate the right of the Contractor to proceed as provided in the General Conditions.

B. The Contractor shall call for, coordinate and support inspections and tests required by the Contract Documents. The Owner shall pay all costs for special inspections and tests, required by the Contract Documents with the Contractor paying for coordination of said tests. The presence of, or absence from, the Contract work site of any Owner's Representative shall not relieve the Contractor of his responsibilities for providing of inspection or testing requirements of the Contract.

C. Should it be considered necessary or advisable by the Owner's Representative, at any time before final acceptance of the entire work, to make an examination of work already completed by removing or tearing out, the Contractor shall promptly on request furnish all necessary facilities, labor, and materials. If such work is found to be defective or nonconforming in any material respect, due to the fault of the Contractor or his Subcontractors, the Contractor shall defray all the expenses of such examinations and of satisfactory reconstruction. However, if such work is found to meet the requirements of the Contract, the actual direct cost of labor and material necessarily involved in the examination and replacement plus ten percent (10%) shall be allowed the Contractor and, in addition, if completion of the work has been delayed thereby, he shall be granted a suitable extension of time based on the additional work involved.

D. Inspection of material and finished articles at the place of production, manufacture, or shipment shall be final except as regards latent defects, departures from specific requirements of the Contract, damage or loss in transit, and fraud or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the inspection of materials and workmanship for final acceptance as a whole or in part shall be made at the site. Nothing contained in this paragraph shall in any way restrict the Contracting Agency's rights under any warranty or guarantee.

E. Manufactured articles, materials and equipment shall be applied, installed, connected, erected, cleaned, and conditioned as per manufacturer's printed directions, unless specified to contrary. The Contractor shall provide at least one set of all manufacturers' installation directions, on the jobsite at all times for inspection information.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 40 00

SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Temporary utilities such as heat, water, electricity, and land line telephone.
2. Computer with high speed internet access and fax machine.
3. Field offices for the Contractor's personnel, Field offices and utilities for Owner's field office.
4. Sanitary facilities.
5. Enclosures such as tarpaulins, barricades, and canopies.
6. Temporary security fencing.
7. Project Sign.
8. Site and interior lighting.
9. Interior ventilation.
10. Dust control.
11. Traffic control.
12. Security protection provisions.
13. Access barriers.
14. Removal of temporary facilities and controls.

B. Related Work Described Elsewhere:

1. General Conditions	
2. Supplementary Conditions	
3. Summary of Work	Section 01 01 00
4. Construction Cleaning	Section 01 56 90
5. Storage and Protection	Section 01 62 00
6. Contract Close-out Procedures	Section 01 70 00
7. Final Cleaning	Section 01 71 00

1.02 REQUIREMENTS NOT INCLUDED

A. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the work are not part of this Section.

B. Permanent installation and hookup of various utility lines are described in other Sections.

1. Contractor shall coordinate with Electric Utility for temporary power.
2. Telephone: Contractor to provide phone for construction.

C. 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 indication by Owner's Representative such temporary activity or facility is not required for successful completion of Work and compliance with requirements of Contract Documents.

1.03 QUALITY ASSURANCE

A. In addition to compliance with governing regulations and rules, and recommendations of utility companies, comply with specific requirements indicated in these specifications and with applicable local codes and industry standards for construction work.

B. Comply with provision of Section 01 61 00 Transportation and Handling.

C. Temporary connections shall be made in an approved manner meeting all applicable codes. Caution shall be taken so systems are not overloaded. Contractor shall take special precautions to keep his temporary connections and lines from being damaged. Temporary connections shall be disconnected and removed prior to completion of Project and returned to original conditions.

1.04 JOB CONDITIONS

A. General:

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

B. Conditions of Use:

1. Install, operate, maintain, and protect temporary facilities in safe, non-hazardous, sanitary, manner and location, protective of persons and property, and free of deleterious effects.

C. Pay costs for such general services and temporary facilities, except as otherwise specified, until final acceptance with Work unless Owner's Representative makes arrangements for use of complete portions of Work after Substantial Completion in accordance with provisions of General Conditions.

PART 2 PRODUCTS

2.01 ELECTRICITY AND LIGHTING

A. The Contractor shall provide the following:

1. Connect to temporary service and provide all equipment necessary for temporary power and lighting. Verify electrical service is of adequate capacity for all construction tools and equipment without overloading facilities.
2. Provide power distribution as required throughout for construction operations of all trades. Locate power distribution boxes at convenient locations in building. Provide distribution boxes for each voltage supply complete with circuit breakers, disconnect switches, and other electrical devices required to protect power distribution system.
3. Provide a temporary lighting system required to satisfy minimum requirements of work, inspection, safety and security. Supply not less than 2 watts per square foot of floor area for illumination in areas of building where work is being performed, unless higher illumination requirements are specified elsewhere.

4. Temporary interior and exterior lighting during construction is to be maintained by Contractor so that work can be properly and safely performed. Special attention shall be given so that stairs, ladders, openings, barricades and other similar items and spaces are adequately lighted.
5. Conform to applicable provision of governing codes. Maintain temporary wiring in safe manner, utilized to not constitute hazard to persons or property.
6. Permanent electrical power, when in operating condition, may be used for temporary power for construction purposes, provided Contractor assumes full responsibility for entire power system.
7. At completion of construction work remove temporary wiring, lighting and other temporary electrical equipment devices.
8. Contractor shall be responsible for all power and gas utility costs during construction until substantial completion is approved.

2.02 HEATING AND VENTILATION

A. Contractor shall provide, at his own expense, sufficient temporary heat for proper installation of work; and to protect all work and materials; and shall keep humidity down to extent required to prevent corrosion, dampness and mildew potentially damaging to materials and finishes. Fuel, equipment, and method of temporary heat shall be reviewed by Owner's Representative for appropriateness. Do not overheat spaces and materials. All such heating, ventilation and services shall be provided and maintained until final acceptance of all work. In addition, provide heat and ventilation prior and during Work operations as specified in Specifications.

B. Connect temporary heating and ventilating equipment to electric facilities; contractor to pay cost for energy used.

C. Provide ventilation of enclosed areas to cure materials, to disperse humidity, and to prevent accumulations of dust, fumes, vapors, or gases.

D. Prior to operation of permanent facilities for temporary purposes, verify installation is approved for operation, and filters are in place. Provide and pay for operation, maintenance and utilities. Use of permanent heating plant shall not relieve Contractor of guarantee responsibilities.

E. If permanent heating system is used for temporary heat, or ducts used for ventilation, completely clean ducts of dust and dirt and replace disposable type filers on as-needed basis, and install new permanent type filters prior to occupancy by Owner.

2.03 WATER

A. Contractor shall furnish and install necessary temporary piping to carry on work and upon completion of Work shall remove all temporary piping.

B. Contractor shall obtain necessary permits.

C. Furnish drinking water with suitable containers and cups for use of employees. Conveniently locate drinking water dispensers in areas where Work is in progress.

D. Contractor shall pay for all water brought to the site for construction work or obtained through utility.

2.04 SANITARY FACILITIES

A. Provide and maintain adequate temporary toilet and hand washing facilities, approved by regulating authorities, throughout construction for all personnel connected with Work.

B. Locate where directed when work is started and maintain in sanitary condition at all times supplied with adequate amounts of tissue, subject to inspection and approval of Owner's Representative.

C. Provide separate facilities for male and female personnel when both sexes are working at Project.

D. As soon as conditions allow, temporary toilets may, upon approval of Owner's Representative, be located outside near building entries.

E. Remove temporary facilities when directed and disinfect premises.

2.05 STORAGE AND SHOP

A. Contractor shall provide temporary storage and shop rooms and /or enclosures that may be required at site for safe and proper storage of tools, materials, etc. Locate such facilities only in locations approved by Owner's Representative and so as not to interfere in any way with proper installation and completion of other work.

B. During progress of Work, materials shall be neatly stacked at such points as Owner's Representative may direct and shall be properly cared for and protected from weather and theft.

C. Contractor shall store construction material and equipment within boundaries of designated areas. Storage of gasoline or similar fuels shall conform to NFPA regulations and local fire marshal regulations and shall be confined within definite boundaries apart from buildings as approved by authorities having jurisdiction.

2.06 FIELD OFFICES

A. Provide a field office adequate in size and accommodation for Contractor's offices, office supplies and storage, and combined use by Owner's Representative, until Substantial Completion of the Project.

2.07 TELEPHONE SERVICE

A. Provide and maintain direct line telephone service at Site to each of Contractor's field offices.

B. Pay all costs for installation, maintenance, normal monthly charges and all Contractor's long distance charges.

C. Remove temporary telephone service at completion of work.

D. Provide functioning facsimile machine, copier, and network connection for contractor’s email in office for duration of project.

2.08 UTILITY MARKERS

A. Provide markers above all new and disturbed existing below grade buried utility lines in accordance with this Article. Identify location of markers and include marker information on Record Documents, specified in Section 01 72 00.

B. Provide stake at each extremity end of utility with 14 gauge trace wire along side of each utility line. Securely attach trace wire to stake at each end.

C. Set markers at all locations where the following conditions exist:

1. Above utility lines at exterior walls of building and at entries and exits of lines from above grade installations.
2. At ends and changes of direction of lines.
3. Debatable locations shall be directed by the Owner's Representative.

PART 3 EXECUTION

3.01 MAINTENANCE

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

B. Remove such temporary facilities and controls as rapidly as progress of Work will permit, or as directed by Owner's Representative.

3.02 USE OF TEMPORARY FACILITIES

A. Temporary facilities shall be made available for use by workmen and subcontractors employed on Project and Owner's Representative, subject to reasonable direction by Contractor as to their proper and most efficient utilization.

3.03 CONSTRUCTION AIDS

A. Provide and operate drainage and pumping equipment; maintain excavations and Site free of standing water.

B. Provide and maintain properly calibrated moisture meter of type acceptable to Owner's Representative.

1. Verify moisture content of concrete and concrete masonry units, wood and wood products, gypsum wallboard and other materials to assure that substrate products are dry and cured to subsequent finish manufacturer's recommendations prior to installation of finish materials.

3.04 ENCLOSURES

A. Security:
1. At earliest possible date, secure building against unauthorized entrance at times personnel are not working.

2. Provide temporary, insulation, weather-tight closures of openings in exterior surfaces to provide acceptable work conditions and protection for material; to allow for temporary heating and prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.

B. Access Provisions:
1. Provide ramps, stairs, ladders, and similar temporary access elements as reasonably required to perform Work and facilitate inspection during installation.
2. Comply with reasonable requests of governing authorities performing inspections.
3. When permanent stairs are available for access, during construction, cover finished surfaces and maintain free from damage and deterioration through substantial completion.

3.05 PROTECTION OF INSTALLED WORK

A. Provide temporary protection for installed products in accordance with requirements specified in Section 01 62 00 and as follows. Control traffic in immediate area of installed products to minimize damage.

B. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects, and storage.

C. Prohibit traffic and storage on waterproofed and roofed surfaces, on lawn, on concrete paving, and landscaped areas.

D. Prohibit and take necessary precautions to prevent oil, gas and other liquids from vehicles and equipment from discharging onto concrete and asphalt concrete pavement.

3.06 POLLUTION CONTROL

A. Use water sprinkling and other suitable methods to limit dust and dirt rising and scattering in air to lowest practicable level.

1. Do not use water if use may create hazardous or objectionable conditions such as ice, flooding and pollution.
2. Comply with governing regulations pertaining to environmental protection.

3.07 TRAFFIC

A. Conduct operations and removal of debris to ensure minimum interference with adjacent occupied facilities.

B. Do not close or obstruct completed areas without permission from Owner's Representative. Provide alternate and safe routes around closed or obstructed traffic ways if required.

3.08 SECURITY AND PROTECTION PROVISIONS

A. Provide temporary security and protection including, but not limited to; fire protection, barricades, warning signs/lights, personnel security program (theft prevention), environmental protection, and similar provision intended to minimize property losses, personal injuries, and claims for damages at Site.

B. Unauthorized Entry:
1. Maintain provision for closing and locking building during non-working hours.

3.09 REMOVAL

A. Completely remove temporary materials and equipment when use is no longer required.

B. Remove temporary underground installations to depth of 2 ft. below finish Site grade.

C. Clean and repair damage caused by temporary installations or use of temporary facilities. Restore any installed facilities used for temporary services to specified, or original condition.

3.10 CLEANING

A. Comply with requirement specified in Section 01 56 90.

B. Maintain the public road and access to the Site in a clean condition. Remove the mud, dirt, rocks, etc. from the tires of vehicles before they exit the Site.

END OF SECTION 01 50 00

SECTION 01 56 90 – CONSTRUCTION CLEANING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Cleaning and disposal of waste materials, debris, and rubbish during construction.

B. Related Work Described Elsewhere:
1. General Conditions: Division 1
2. Final Cleaning Section 01 71 00
3. Individual Specification Sections: Specific cleaning for Product or Work.

PART 2 PRODUCTS

2.01 EQUIPMENT

A. Provide covered containers for deposit of waste materials, debris, and rubbish.

PART 3 EXECUTION

3.01 CLEANING

A. Maintain areas under Contractor's control free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition. Remove scrap materials, rubbish and trash daily from in and about building. Do not permit scrap materials, rubbish and trash to be scattered on adjacent areas.

B. Maintain the public road and access to the site in a clean condition. Remove the mud, dirt, rocks, etc. from the tires of vehicles before they exit the Site.

C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to closing the space.

D. Periodically clean interior areas to provide suitable conditions for work.

E. Broom clean interior areas prior to start of surface finishing and continue cleaning on an as-needed basis.

F. Control cleaning operations so that dust and other particles will not adhere to wet or newly-coated surfaces.

3.02 DISPOSAL

A. Remove waste material, debris, and rubbish from site periodically and dispose of off-site.

END OF SECTION 01 56 90

SECTION 01 60 00 – MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Products

B. Related Work Described Elsewhere:

1. Instructions to Bidders:
2. General Conditions: Division 1
3. Quality Control: Section 01 40 00

1.02 PRODUCTS

A. Products: Means new materials, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.

B. Provide interchangeable components of the same manufacture, for similar components.

C. No product or material shall be used as a building material in this project which contains any asbestos.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 60 00

SECTION 01 61 00 – TRANSPORTATION AND HANDLING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Protection of products schedule for use in Work.

B. Related Work Described Elsewhere:
1. General Conditions
2. Additional procedures as specified in other sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Include procedures required to assure full protection of work and materials.

1.03 MANUFACTURERS' RECOMMENDATIONS

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

1.04 PACKAGING, TRANSPORTATION

A. Require supplier to package products in boxes or crates for protection during shipment, handling, and storage. Protect sensitive products against exposure to elements and moisture, including ocean barging.

B. Protect sensitive equipment and finishes against impact, abrasion, and other damage. Temperature sensitive products, such as paint, shall be protected from freezing during shipment.

C. Arrange deliveries of products in accordance with construction progress schedules. Allow time for inspection prior to installation.

D. Coordinate deliveries to avoid conflict with work; conditions at site; limitations on storage space; availability of personnel and handling equipment; and Owner's use of premises.

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

1. Maintain packaged materials with seals unbroken and labels intact until time of use.
2. Promptly remove damaged material and unsuitable items from job site, and promptly replace with material meeting specified requirements, at no additional cost to Owner.

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

G. Clearly mark partial deliveries of component parts of equipment. Identify equipment and contents to permit easy accumulation of parts and facilitate assembly.

H. Immediately on delivery inspect shipment to ensure:
1. Product complies with requirement of Contract Documents and reviewed submittals.
2. Quantities are correct.
3. Accessories and installation are correct.
4. Containers and packages are intact and labels are legible.
5. Products are protected and undamaged.

1.05 PRODUCTS

A. Provide equipment and personnel to handle products, including those provided by Owner, by methods to prevent soiling and damage.

B. Provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

C. Handle product by methods to avoid bending or overstressing. Lift large and heavy components only at designed lift points.

1.06 PROTECTION

A. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.

B. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

C. Maintain finished surfaces clean, unmarred and suitably protected until accepted by Owner's Representative.

1.07 REPAIRS AND REPLACEMENTS

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

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

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 61 00

SECTION 01 62 00 – STORAGE AND PROTECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Storage and protection of products scheduled for use in Work.

1.02 QUALITY ASSURANCE

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

1.03 MANUFACTURERS' RECOMMENDATIONS

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

1.04 STORAGE - GENERAL

A. Store products, immediately on delivery, in accordance with manufacturer's instruction, with seals and labels intact. Protect until installed.

B. Arrange storage in manner to provide access for maintenance of stored items and for inspection.

1.05 ENCLOSED STORAGE

A. Store products, subject to damage by elements, in substantial, weather-tight enclosures.

B. Maintain temperature and humidity within ranges stated in manufacturer's instruction and/or individual technical specifications section.

C. Provide humidity control and ventilation for sensitive products as required by manufacturer's instructions and as necessary to protect product.

D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

1.06 EXTERIOR STORAGE

A. Provide substantial platforms, blocking, or skids to support fabricated products above ground; slope to provide drainage. Protect products from soiling and staining.

B. For products subject to discoloration or deterioration from exposure to elements, cover with impervious sheet material. Provide ventilation to avoid condensation.

C. Store loose granular materials in clean solid surfaces such as pavement, or on rigid sheet materials, to prevent mixing with foreign matter.

D. Provide surface drainage to prevent erosion and ponding of water.

E. Prevent mixing of refuse, chemically injurious materials, and liquids.

1.07 MAINTENANCE OF STORAGE

A. Periodically inspect stored products on a schedule basis.

B. Verify storage facilities comply with manufacturer's product storage requirements.

C. Verify manufacturer required environmental conditions are maintained continually.

1.08 MAINTENANCE OF EQUIPMENT STORAGE

A. For mechanical and electrical equipment in long-term storage, provide manufacturer's service instructions to accompany each item, with notice of enclosed instructions shown on exterior of package.

B. Service equipment on regularly scheduled basis, maintaining log of services; submit as record document.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 62 00

SECTION 01 63 00 – PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Contractor's options in selection of products.
2. Products List
3. Requests for Substitution Form.

B. Related Work Described Elsewhere:
1. Instructions to Bidders
2. Substitution Request Form
3. General Conditions
4. Summary of Work: Section 01 01 00
5. Reference Standards: Section 01 09 00
6. Shop Drawings, Product Data, and Samples: Section 01 34 00
7. Project Record Documents: Section 01 72 00
8. Operation and Maintenance Data: Section 01 73 00

1.02 OPTIONS

A. Products Specified by Reference Standard or by Description Only: Any product meeting those standards.

B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution a minimum of 7 days prior to Bid for any manufacturer not specifically named. Following Proposal opening, only products of named manufacturers meeting specifications or approved substitutions shall be allowed.

C. Products Specified by Naming Only One or More Manufacturers with "No Substitution" statement: Products of named manufacturers meeting specifications; no substitution allowed.

1.03 PRODUCTS LIST

A. Within 15 days after date of Notice to Proceed, transmit three copies of list of major products which are proposed for installation, including name of manufacturer.

B. Tabulate products by Specifications Section number, title and Article number.

C. For Products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

D. Owner's Representative will reply in writing within 10 days stating whether there is reasonable objection to listed items. Failure to object to listed items shall not constitute waiver of requirements of Contract Documents.

1.04 LIMITATIONS ON SUBSTITUTIONS

A. Instructions to Bidder govern terms for submitting request for substitutions under requirements specified in this Section.

B. Requests for substitutions after Contract Award may be considered only in proven cases of product unavailability through no fault of Contractor.

C. Substitutions will not be considered when acceptance will require substantial revision of Bidding or Contract Documents.

D. Do not order or install substitute products without written acceptance.

E. Two requests for substitution for each product will be considered. When substitution is not accepted, provide specified product.

F. Owner's Representative and Architect will determine acceptability of substitutions.

1.05 REQUESTS FOR SUBSTITUTIONS

A. Submit substitution requests using a Substitution Request Form. Substitution requests will not be reviewed without an accompanying fully executed Substitution Request Form.

B. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.

Submit samples, shop drawings from prior jobs, product date, manufacturer's installation instructions, and certified test results attesting to proposed product equivalence.

C. Identify product by Specification Section and Article numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and suppliers as appropriate.

D. Attach product data as specified in Section 01 34 00.

E. List similar project using product, dates of installation, and names with numbers of Owner and Architect.

F. Give itemized quality and performance comparison between proposed substitution with specified product, listing variations, and reference to Specification Section and Article numbers. Base comparison on tests and criteria specified, and with specified manufacturer's performance criteria when tests and criteria are not otherwise specified.

G. List availability of maintenance services and replacement materials.

H. State effect of substitution on construction schedule, and changes required in other work or products.

I. Forms that are incomplete or incorrectly filled out will be rejected.

1.06 BIDDER REPRESENTATION

A. Request for substitution constitutes representation that Bidder:

1. Has investigated proposed product and has determined that it meets or exceed the quality level of specified product.
2. Will provide same warranty for substitution as for specified product.
3. Will coordinate installation and make changes to other Work which may be required for work to be complete with no additional costs to Owner.
4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse Owner for review or redesign service associated with re-approval by authorities.

1.07 SUBMITTAL PROCEDURES

A. Submit five copies of the Request for Substitution Form with attachments. Limit each request to one proposed substitution.

B. Owner's Representative and Architect will review Contractor's request for substitutions with reasonable promptness.

C. During bidding period, Owner will record acceptable substitutions in Addenda.

D. For accepted products, submit shop drawings, product data, and samples under provisions of Section 01 34 00.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

SUBSTITUTION REQUEST FORM

TO: CITY OF KENAI
ATTN: SCOTT CURTIN
210 FIDALGO AVE.
KENAI, AK 99611
(907) 283-8240

PROJECT: KENAI REC CENTER UPGRADES

SPECIFIED ITEM:

Section Paragraph Description

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION:

Attached data includes product description, specifications, drawings, photographs, performance and test date adequate for evaluation of the request; applicable portions of the data area clearly identified.

Attached data also includes description of changes to Contract Documents which proposed substitution will require for its proper installation.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

1. The proposed substitution does not affect dimensions shown on Drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance and quality of the Proposed Substitution are equivalent or superior to the Specified Item.

Submitted by:

Signature

Firm

Address

Date
Telephone

For use by Design Consultant:

☐ Accepted ☐ Accepted as noted

☐ Not Accepted
By:
Date:
Remarks:

END OF SECTION 01 63 00

SECTION 01 67 00 – SYSTEM DEMONSTRATION

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Procedures for demonstration of equipment operation and instruction of Owner's personnel.
2. Contractor shall be responsible for instruction and training of operating personnel in operation and maintenance of mechanical, electrical, and other systems in building.

B. Related Work Described Elsewhere:
1. Summary of Work: Section 01 01 00
2. Operation and Maintenance Data: Section 01 73 00
3. Other Individual Sections: Specific requirements for demonstrating systems and equipment.

1.02 QUALITY ASSURANCE

A. When specified in individual sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner personnel, and provide written report stating demonstrations and instructions have been completed.

B. Owner's Representative will provide list of personnel to receive instructions and will coordinate their attendance at agreed upon times.

1.03 SUBMITTALS

A. Submit preliminary schedule for Owner's Representative's approval, listing times and dates for demonstration of each item of equipment and each system three weeks prior to proposed dates.

B. Contractor shall submit his training materials and agenda to the Owner's Representative at least 15 days prior to start of formal maintenance training classes. Mutually agreeable dates for receiving training shall be arranged with Owner's Representative. Building system shall be complete when training is given.

C. Submit reports within one week after completion of demonstrations, that demonstrations and instructions have been satisfactorily completed. Give time and date of each demonstration, hours devoted to demonstration, and list of persons present.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 PREPARATION

A. Verify equipment has been inspected and put into operation in accordance with applicable specification Section; testing, adjusting, and balancing has been performed in accordance with applicable specification Section, and equipment and systems are fully operational.

B. Have copies of completed operation and maintenance manuals at hand for use in demonstrations and instructions.

3.02 TYPE OF TRAINING

A. Instruction shall be on the job.

B. Services of competent contractors or manufacturer engineers and qualified maintenance personnel shall be provided to adequately train designated Owner's employees in operation and maintenance of all mechanical and electrical systems.

C. Operating and maintenance manuals prepared by Contractor, manufacturers literature of actual equipment installed and copies of approved posted operating instructions shall be used as a basis for training.

3.03 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of final inspection. For equipment requiring seasonal operation, perform instructions for operation and maintenance.

B. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

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

D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

3.04 TIME ALLOCATED FOR INSTRUCTIONS

A. Training period: Training shall occur within one week after substantial completion. Not less than four hours for each category of major equipment and system except as specifically listed below:

1. HVAC System: Including air handlers, duct work, dampers and related equipment with respective operating controls. 8 hours.

2. Overall Control System: Coordinate respective HVAC and other system controls, show how controls function together and provide integrated overall system control. 8 hours.

3. Electrical System: All building services, lighting, communications, public address system, access control, energy management systems, and all other electrical systems. 8 hours.

4. Piping and Plumbing Systems: Storm and sanitary drainage systems, and hot and cold water supply systems. 4 hours.

5. Fire protection equipment, intercom system, and other equipment not specifically stated above. 4 hours/each.

B. Proof of training must be certified in writing by Owner's personnel.

END OF SECTION 01 67 00

SECTION 01 70 00 – CONTRACT CLOSE-OUT PROCEDURES

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Administrative provisions for Substantial Completion and Final Acceptance.

B. Related Work Described Elsewhere:

1.	General Conditions:	
2.	Summary of Work:	Section 01 01 00
3.	Applications for Payment	Section 01 02 70
4.	Temporary Facilities and Temporary Controls	Section 01 50 00
5.	Final Cleaning	Section 01 71 00
6.	Project Record Documents	Section 01 72 00
7.	Operations and Maintenance Data	Section 01 73 00
8.	Warranties and Bonds	Section 01 74 00
9.	Spare Parts and Maintenance Materials	Section 01 75 00

1.02 SUBSTANTIAL COMPLETION

A. Advise Owner's Representative of pending insurance change-over requirements.

B. When Contractor considers Work or designated portion of Work is substantially complete, submit written notice with list of items to be completed or corrected.

1. Submit formal written request for Substantial Completion Inspection.

2. Contractor shall submit Certificate of Occupancy issued by local Building Official with the request for Substantial Completion Inspection.

C. Should Owner Representative's inspection find Work is not substantially complete, he will promptly terminate the inspection, and notify Contractor in writing, listing observed deficiencies.

D. Contractor shall remedy deficiencies and send a second written notice of substantial completion.

E. When Owner's Representative finds Work is substantially complete he will prepare a Certificate of Substantial completion in accordance with provisions of General Conditions.

1.03 FINAL COMPLETION

A. When Contractor considers Work is complete, submit written certification:

1. Contract Documents have been reviewed.
2. Work has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents, and deficiencies listed with Certificate of Substantial Completion have been corrected.
4. Equipment and systems have been tested, adjusted, and balanced, and are fully operational.

5. Operation of systems has been demonstrated to Owner's Personnel.
6. Work is complete and ready for final inspection.

B. Should Owner's Representative inspection find Work incomplete, he will promptly notify Contractor in writing listing observed deficiencies.

C. Contractor shall remedy deficiencies and send a second certification of final completion.

D. When Owner's Representative finds work is complete, he will consider close-out submittals.

1.04 REINSPECTION FEES

A. Should status of completion of Work require re-inspection by Owner's Representative due to failure of Work to comply with Contractor's claims on initial inspection, Owner will deduct the amount of his expense, including but not necessarily limited to Owner's Representative compensation for re-inspection services from final payment to Contractor.

1.05 CLOSE-OUT SUBMITTALS

A. Evidence of Compliance with Requirements of Governing Authorities:
   1. Certificate of Occupancy
   2. Certificates of Inspection required for mechanical and electrical systems.

B. Project Record Documents: Under provision of Section 01 72 00.

C. Operation and Maintenance Data: Under provisions of Section 01 73 00.

D. Warranties and Bonds: Under provisions of Section 01 74 00.

E. Spare Parts and Maintenance Materials: Under provisions of Section 01 75 00.

F. Keys and Keying Schedule: Under provisions of Section 08 70 00.

G. Evidence of Payment and Release of Liens: In accordance with Conditions of the Contract.

H. Consent of Surety to Final Payment.

I. Certificates of Insurance for Products and Completed Operations: In accordance with Supplementary Conditions.

1.06 STATEMENT OF ADJUSTMENT OF ACCOUNTS

A. Submit final statement reflecting adjustments to Contract Sum indicating:

1. Original Contract Sum
2. Previous Change Orders
3. Changes Under Allowances
4. Changes Under Unit Prices
5. Deductions for Uncorrected Work
6. Deductions for Liquidated Damages
7. Deductions for Re-inspection Fees
8. Other Adjustments to Contract Sum
9. Total Contract Sum as adjusted.

10. Previous Payments
11. Sum Remaining Due

B. Owner's Representative will issue a final Change Order reflecting approved adjustments to Contract Sum not previously made by change orders.

1.07 APPLICATION FOR FINAL PAYMENT

A. Submit application for final payment in accordance with provisions of Conditions of the Contract.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 70 00

SECTION 01 71 00 – FINAL CLEANING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Final Cleaning of Project.

B. Related Work Described Elsewhere:

1. General Conditions
2. Construction Cleaning: Section 01 56 90
3. Contract Close-out Procedures: Section 01 70 00
4. Individual Specifications Section: Specific cleaning of product or work.

1.02 CLEANING

A. Execute cleaning prior to inspection for Substantial Completion of the Work.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

A. Use materials which will not create hazards to health or property, and which will not damage surfaces.

B. Use only materials and methods recommended by manufacturer of material being cleaned.

PART 3 EXECUTION

3.01 CLEANING

A. In addition to removal of debris and cleaning specified in other section, clean interior and exterior exposed-to-view surfaces.

B. Remove temporary protection and labels not required to remain.

C. Clean finishes free of dust, stains, films, and other foreign substances.

D. Clean transparent and glossy materials to a polished condition; remove foreign substances. Polish reflective surfaces to a clear shine.

E. Vacuum clean carpeted and similar soft surfaces.

F. Clean, damp mop, wax, and polish resilient and hard-surface floors as specified.

G. Clean surfaces of equipment and remove excess lubrication.

H. Clean plumbing fixtures, food service equipment, and toilet accessories to a sanitary condition.

I. Clean permanent filters of ventilation equipment and replace disposable filters when units have been operated during construction; in addition, clean ducts, blowers and coils when units have been operated without filters during construction.

J. Clean light fixtures and lamps.

K. Maintain cleaning until Substantial Completion.

L. Remove waste, foreign matter, and debris from roofs, gutters, area ways, and drainage systems.

M. Remove waste, debris, and surplus materials from site. Clean grounds; remove stains, spills, and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.

N. Owner will provide final cleaning of interiors after Substantial Completion, except that items not adequately cleaned prior to Substantial Completion shall be recleaned prior to final inspection. Provide access and coordinate with Owner's personnel at a time agreeable to both parties.

O. Prior to Substantial Completion, clean all parking lots, aprons and driveways on site to a new state.

END OF SECTION 01 71 00

SECTION 01 72 00 – RECORD DOCUMENTS

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Maintenance of Record Document and samples.
2. Submittal of Record Documents and samples.

B. Related Work Descried Elsewhere:

1. Grades, Lines and Levels:	Section 01 05 20
2. Shop Drawings, Product Data and Samples	Section 01 34 00
3. Contract Close-out Procedures	Section 01 70 00
4. Operation and Maintenance Data	Section 01 73 00

5. Individual Specifications Sections:
6. Manufacturer's certificates and certificates of inspection.

C. The Contractor shall maintain on the jobsite one complete set of drawings and specifications on which all items located at jobsite and all changes of material, equipment, or dimensions shall be recorded and kept current on a daily basis and shall be made available to the Owner's Representative at all times. This shall include all work of the Contractor and Subcontractors. Each progress pay request will not be processed until Owner's Representative determines that the Contractor has kept the "As-Built" drawings and specifications as specified.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. In addition to requirements in General Conditions, maintain at the site for Owner's Representative one record copy of:

1. Contract Drawings
2. Specifications
3. Addenda
4. Change Orders and other modifications to the Contract
5. Reviewed shop drawings, product data, and samples
6. Field test records
7. Inspection certificates
8. Manufacturer's certificates

B. Store Record Documents and samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.

1. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff.

C. Label and file Record Documents and samples in accordance with Section number listing in Table of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, printed letters.

D. Maintain Record Document in a clean, dry and legible condition. Do not use Record Documents for construction purposes.

E. In the event of loss of recorded data, use means necessary to again secure the data to the Owner's Representatives approval.

F. Keep Record Documents and samples available for inspection by Owner's Representative.

1.04 RECORDING

A. Record information on a set of blue line opaque drawings, and in a copy of a Project Manual, provided by Owner's Representative.

B. Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.

C. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

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

D. Contract Drawings and Shop Drawing: Legibly mark each item to record actual construction, including:
1. Measured depths of elements of foundation in relation to finish first floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surfaces improvements.
    a. Locate with actual dimensions to building walls and corners, buried and concealed wiring and piping.
    b. Show end of run, changes in direction, valves and splice boxes.
    c. Record average depth relating to building datum.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction. Show on Record Drawings, the centerline of each run.

    a. Clearly identify the item by accurate note such as "cast iron drain”,” galv. water," etc.
    b. Show, by symbol or note, the vertical location of the item ("under slab," "in ceiling plenum," "exposed," etc.).
    c. Make all identification sufficiently descriptive that it may be related reliably to the Specifications.

4. Field changes of dimension and detail.
5. Changes made by Modifications.
6. Details not on original Contract Drawings.
7. References to related shop drawings and Modifications.

E. Specifications: Legibly mark each item to record actual construction, including:

1. Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.

2. Changes made by Addenda and Modifications.

F. Other Documents: Maintain manufacturer's certifications and inspection certifications required by individual Specifications sections.

1.05 SUBMITTALS

A. At Contract close-out, deliver Record Documents and samples under provisions of Section 01 70 00.

B. Transmit with cover letter in duplicate, listing:

1. Date
2. Project Title and Number
3. Contractor's name, address and telephone number
4. Number and title of each Record Document.
5. Signature of Contractor or authorized representative.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 72 00

SECTION 01 73 00 – OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
1. Format and content of manuals.
2. Instruction of Owner's personnel.
3. Schedule of submittals.

B. Related Work Described Elsewhere:

1.	Shop Drawings, Product Data, and Samples	Section 01 34 00
2.	Quality Control:	Section 01 40 00
3.	Systems Demonstration:	Section 01 67 00
4.	Project Record Documents:	Section 01 72 00
5.	Warranties and Bonds:	Section 01 74 00

6. Individual Specifications Section: Specific requirements for operation and maintenance data.

1.02 QUALITY ASSURANCE

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT

A. Prepare data in the form of an instructional manual.

B. Binders: Commercial quality, 8 1/2 x 11 in. three-ring binders with hardback, cleanable, plastic covers; two in. maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; list title of Project, identify subject matter of contents.

D. Arrange content under direction of Owner's Maintenance Department. Coordinate with Owner's personnel one week prior to assembly of manuals.

E. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

F. Text: manufacturer's printed data, or typewritten data on 24-pound paper.

G. Drawings: Provide with reinforced punched binders tab. Bind in with text; fold larger drawings to size of text pages.

1.04 CONTENTS, EACH VOLUME

A. Table of Contents: Provide title of Project, names, addresses, and telephone number of Owner's Representative, subconsultants, and Contractor with name of responsible parties, schedule of products and systems, indexed to content of the volume.

B. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

C. Product Data: Mark (by highlighting, etc. each sheet to clearly identify specific products and component model numbers of equipment and materials used, and data applicable to installation. Delete inapplicable information.

1. Furnish a separate complete set of approved product data, in file folders for each Section, with specification item number recorded on folder. Assemble in cardboard "bankers box", in section number sequence. Turn over to the City of Kenai.

D. Drawings: Supplement product date to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

1. Furnish a complete set of shop drawings, as installed, and turn over to the City of Kenai. Fold and place in folders as above for product data, with Drawing and Specification item number recorded on folder. Assemble in same cardboard "banker's box" as above, in Section number sequence.

E. Type Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 40 00.

F. Warranties and Bonds: As specified in Section 01 74 00.

1.05 MANUAL FOR MATERIALS AND FINISHES

A. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for reordering custom manufactured products.

1. Furnish a complete list (room by room) of all paint used. List is to include: paint Manufacturer, Manufacturer's color codes used (by area), and the name, address and phone number of supplier.

2. Furnish a complete list (room by room) of all floorcovering products used. List is to include: type of floorcovering, manufacturer, manufacturer's color codes used (by area), and the name , address and phone number of Installer.

3. Furnish a complete list of all roofing materials used.

B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional Requirements: As specified in individual product specification Section.

E. Provide a listing in Index for design data, with tabbed fly sheet and space for insertion of data.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

B. Panelboard Circuit Directories: Provide electrical service characteristics, controls and communications.

C. Include color coded wiring diagrams as installed.

D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

E. Maintenance Requirements: Include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

F. Provide servicing and lubrication schedule, and list of lubricants required.

G. Include manufacturer's printed operation and maintenance instructions.

H. Include sequence of operation by controls manufacturer.

I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

J. Provide control diagrams by controls manufacturer as installed.

K. Provide contractor's coordination drawings, with color coded piping diagrams as installed.

L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

M. Include test and balancing reports.

N. Additional Requirements: As specified in individual product specification Sections.

O. Provide a listing in Index for design data, with tabbed fly sheet and space for insertion of data.

1.07 INSTRUCTION OF OWNER PERSONNEL

A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.

B. For equipment requiring seasonal operation, perform instructions for other seasons within six months.

C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

1.08 SUBMITTALS

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Owner's Representative will review draft and return one copy with comments.

B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes in final form 15 days prior to final inspection. Copy will be returned after final inspection, and after review by Owner's Maintenance Department and with Owner's Representative comments. Revise content of documents as required prior to final submittal.

D. Submit six copies of revised volumes of data in final form within ten days after final inspection.

E. A separate chapter will be prepared and submitted for each of the following types of equipment or systems included in the project:

1. Heating, ventilating, and air conditioning system.

2. Control Systems.

3. Plumbing.

4. Electrical Systems.

5. Emergency Systems.

6. Communication Systems.

7. Energy Management Systems.

8. Miscellaneous Building Equipment.

9. Other equipment or systems as specified in individual specification Sections.

PART 2 PRODUCTS (not used)
PART 3 EXECUTION (not used)

END OF SECTION 01 73 00

SECTION 01 74 00 – WARRANTIES AND BONDS

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Preparation and submittal
2. Time and schedules of submittals

B. Related Work Described Elsewhere:

1. Instructions to Bidders:
2. General Conditions:
3. Contract Close-out Procedures Section 01 70 00
4. Operation and Maintenance Data Section 01 73 00
5. Individual Specification Sections: Warranties required for specific products or Work.

1.02 FORM OF SUBMITTALS

A. Bind in commercial quality, 8-1/2 x 11 in. three ring side binders with hardback, cleanable, plastic covers.

B. Label cover of each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible principal.

C. Table of Contents: Neatly typed, in the sequence of index to Project Manual, with each item identified with its Section, and name of product or work item. Provide complete information for each of:

1. Product or work item

2. Supplier with name of principal, address and telephone number

3. Date of beginning of warranty or bond

4. Duration of warranty or bond

5. Provide information for Owner's personnel:

a. Proper procedure in case of failure.
b. Instances which might affect validity of warranty or bond.

6. Contractor, name of responsible principal, address and telephone number.

D. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address and telephone number of responsible principal.

1.03 PREPARATION OF SUBMITTALS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item or work. Except for items put into use with Owner's Representative's permission, leave date of beginning of time of warranty until the Date of Substantial Complete is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

1.04 TIME OF SUBMITTALS

A. For equipment or component parts of equipment put into service during construction with Owner's Representative's permission, submit documents within ten days after acceptance.

B. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.

C. For items of Work when acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION 01 74 00

SECTION 00 20 50 DEMOLITION

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

Demolition required for this work includes all removal of existing materials and installations required to accept the additions and renovations of the new work indicated in the Drawings.

B. Definitions:

The term "demolition" as used herein, includes the removal of all existing objects, (excepting those designated to remain) to the substrate indicated in the Drawings, or as necessary to provide proper interface for the new work, plus such other work as further described in the Drawings and specified in subsequent sections.

1.02 QUALITY ASSURANCE

A. Qualification of Workmen:

Employ at least one thoroughly qualified supervisor who shall be present at all times during the demolition operations, who shall be thoroughly familiar with the extent of the operations required, the limitations under which they are to be conducted, and who shall direct all the work under this section.

B. Codes and Standards:

In addition to complying with all pertinent codes and regulations, comply with the requirements of all insurance carriers providing coverage for this project.

1.03 SUBMITTALS

A. Schedule:

Submit proposed methods and operations of building demolition to Architect for review prior to start of work. Include in schedule coordination for shut-off, capping and continuation of utility services as required.

1.04 JOB CONDITIONS

A. Owner's Access to Premises:

The Owner will require access to and occupancy of portions of facilities affected by operations of this section. It shall be the responsibility of the Contractor to make arrangements with the Owner in order to coordinate access to the facilities necessary for his operations. Maintain a minimum of two exits at all facilities at all times, conforming to all applicable codes and regulations.

B. Environmental Requirements:

Employ all means necessary to prevent the spread of dust and noxious odors during demolition operations.

C. Burning:

Disposal of waste by burning will not be permitted except upon express written permission of the Owner.

D. Partial Removal:

Items of salvageable value to Contractor may be removed from structure as work progresses. Salvaged items must be transported from site as they are removed. Storage or sale of removed items on site will not be permitted.

E. Explosives:

Explosives shall not be used in any of the demolition work. This shall not be interpreted to preclude the use of powder actuated fasteners in construction operations.

F. Traffic:

Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

G. Protections:

Ensure safe passage of persons around area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.

1. Erect temporary covered passageways as required by authorities having jurisdiction.

2. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.

H. Damages:

Promptly repair damages caused to adjacent facilities by demolition operations at no cost to Owner.

I. Utility Services:

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

PART 2 PRODUCTS

2.01 MATERIALS

A. Other Materials:

Provide all other materials not specifically described but required for the proper completion of the work of this section which shall be subject to the approval of the Owner's Representative.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:

Prior to all demolition work carefully examine the items, surfaces, or equipment which are to be removed, and determine all conditions, exposed or concealed, which may affect subsequent operations. Verify that demolition operations may be accomplished in accordance with all codes and regulations, the original design, and all approved submittals.

B. Discrepancies:

In the event of discrepancies, ambiguities, interferences, or any other unanticipated condition which might impede orderly & timely execution of the demolition and subsequent operations, immediately notify the Owner's Representative, and do not proceed in questioned areas until resolution or clarification has been obtained.

C. Protection:

Use all means necessary to protect the installations and objects designated to remain intact before, during, and after the demolition work. In the event of damage, immediately make all repairs or replacements necessary, which shall be subject to the approval of the Owner's Representative, and shall be accomplished at no additional expense to the Owner.

3.02 DISPOSAL

All removed materials, not designated for salvage or reuse by the Owner shall become the property of the Contractor, and shall be removed from the premises or disposed of in a legal manner or as directed by the Owner's Representative.

END OF SECTION

SECTION 06 01 00 LUMBER

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

Materials required under this section include, but are not necessarily limited to all wood, plywood, nails, bolts, framing anchors and other hardware, and all other materials or items needed for rough and finish carpentry, but not specifically described in other sections.

B. Related Work Described Elsewhere:

1. Rough Carpentry Section 06 10 00

1.02 QUALITY ASSURANCE

In addition to complying with applicable codes and regulations, comply with the following standards:

A. Lumber Grading Rules and Wood Species to be in conformance with PS20.

B. Grading rules of the following associations apply to materials furnished under this Section:

1. West Coast Lumber Inspection Bureau (WCLB).

2. American Plywood Association (APA).

C. Grade marks of the above association shall appear on all wood products furnished under this section.

D. Testing Exposed Finishes:

1. ASTM E84, maximum 25 flame spread rating.

E. Regulatory Agencies:

1. International Building Code (IBC) published by the International Code Council.

2. Lumber Treatment:

a. Preservative treatment of lumber and plywood:
American Wood Preserves Bureau Standards. (AWPB)

F. Referenced Standards:

1. American Society for Testing and Materials (ASTM)

2. American Wood Preserves Bureau (AWPB)

a. AWPB LP-2 Standard for Softwood Lumber, timber and plywood treated with Waterbone Preservatives for above ground locations.

3. National Forest Products Association (NFPA)

a. National Design Specifications for Wood Construction. 1977

4. American Institute of Timber Construction (AITC)

1.03 SUBMITTALS

Submit in accordance with Section 013400, the following:

A. Materials List:

A complete list of all the types of materials proposed to be furnished under this section.
1. Lumber with framing.
2. Plywood.
3. Roof Decking.
4. Cedar Siding.

PART 2 PRODUCTS

2.01 GRADE STAMPS

A. Framing Lumber:

Identify all framing lumber by the grade stamp of the West Coast Lumber Inspection Bureau.

B. Plywood:

Identify all plywood by the grade of the American Plywood Association.

C. Other:

Identify all other products by the grade stamp of the appropriate grading agency for that particular product.

2.02 DIMENSION LUMBER

A. Material:

1. Provide kiln dried dimension lumber of the species and grade noted on the Drawings with not more than 15% moisture content, and complying with the dry size requirements of the appropriate grading agency.

2. Dress dimension lumber s4s unless otherwise specifically called out.

B. Appearance:

Where framing lumber will be exposed to view and is shown or scheduled to receive a transparent or natural finish, provide lumber of "Appearance" grade.

C. Pressure Treated:

All framing and sheathing shall be pressure treated unless noted otherwise. All bolts, nails, screws and other fasteners in contact with pressure treated wood shall be made of type 304 or type 316 stainless steel. Cut ends to be dipped in pentachloryphenol. Treat with Ammoniacal Copper Arsenate (ACA) to 2 retention of 0.60 pcf per UBC Standard 25-12 and American Wood Preserves Bureau AWPB "FDN".

2.03 PLYWOOD

A. Rough Carpentry:

Provide interior type with exterior glue of the grade and type indicated on the Drawings.

B. Appearance:

Where plywood will not be concealed by other work, provide A-D plugged grade with 'A' side showing unless otherwise noted.

2.04 PARAPET CAP

Use beveled 1 x T&G cedar siding to provide slope at top of parapet. As shown on the drawings.

2.05 WOOD DECKING

4” x 6” Tongue and Groove Douglas Fir Decking to match existing.

2.06 MISCELLANEOUS MATERIALS

A. Anchorage and Fastenings:

Select proper type, size, material, and finish for each application. Comply with the following:

1. Nails and staples: FS FF-N-105
2. Tacks: FS FF-N-103
3. Wood screws: FS FF-N-111
4. Bolts and studs: FS FF-B-575
5. Nuts: FS FF-B-836
6. Washers: FS FF-W-92
7. Lag bolts: FS FF-B-561
8. Toggle bolts: FS FF-B-588
9. Bar or strap anchors: ASTM A-575

PART 3 EXECUTION

3.01 PRODUCT HANDLING

A. Storage and Protection:

Do not deliver any of the products of this section to the jobsite until a secure, dry, sheltered area, away from traffic, is available for their storage. Use all means necessary to protect the products of this section before, during, and after installation and to protect the installed materials and work of all other trades.

B. Repairs and Replacement:

In the event of damage make all repairs and replacements necessary to restore the item to original undamaged condition. Repairs and replacements shall be subject to approval of the Architect and shall be accomplished at no additional expense to the Owner.

C. Damaged Material:

Segregate all damaged material to ensure against its incorporation into the Work, until all necessary repairs, where authorized, have been accomplished.

D. Stockpiling:

Stockpile all materials sufficiently in advance to ensure their availability in a timely manner for the work of all related sections.

E. Compliance:

Do not permit non-complying materials to be delivered to the jobsite and immediately remove any which are delivered, replacing them with materials complying with the requirements of this section.

END OF SECTION

SECTION 06 10 00 ROUGH CARPENTRY

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

The carpentry work required for this project is shown in the Drawings and includes, but is not necessarily limited to framing, blocking, sheathing, backing, inserts, fasteners, framing anchors and other hardware, and all other materials or items needed for Carpentry but not specifically described in other sections of this specification.

1.02 QUALITY ASSURANCE

A. For actual cutting, fitting, and installing of the rough carpentry and associated woodwork, employ only qualified journeymen mechanics who are trained and experienced in the skills required and who are completely familiar with the materials and methods involved.

B. Qualifications of Supervisors:

Employ at least one supervisor who is thoroughly trained in the trade, who is completely familiar with the requirements of the work, who shall be present during all the rough carpentry operations, and who shall direct all the work under this section.

1.03 PRODUCT HANDLING

A. Storage and Protection:

Do not deliver any of the products of this section to the jobsite until a secure, dry, sheltered area, away from traffic, is available for their storage. Use all means necessary to protect the products of this section before, during, and after installation and to protect the installed materials and work of all other trades.

B. Repairs and Replacement:

In the event of damage make all repairs and replacements necessary to restore the item to original undamaged condition. Repairs and replacements shall be subject to approval of the Architect and shall be accomplished at no additional expense to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Lumber: Refer to Section 060100 "Lumber".

PART 3 EXECUTION

3.01 INSTALLATION

A. General:

Install all work in strict accordance with the design, the approved submittals, and all applicable codes and regulations. All wood framing shall be true, straight and plumb to within 1/4" in 12 foot of length.

B. Workmanship:

Discard material with defects which might impair the quality of the work, and units which are too small to fabricate into the work with minimum joints, or with optimum joint arrangement.

Set all work accurately to required levels and lines, with members plumb and true; accurately cut and fitted. Workmanship shall conform to NFPA Construction Specification.

C. Grounds, Nailers, Blocking, Backing:

1. All material in contact with concrete or built-up roofing shall have moisture protection treatment as specified.

2. Provide where shown or where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate with other work or trades involved.

3. Attach to substrates as required to support applied loading.

D. Plywood:

Install as recommended by APA "Guide to Plywood Sheathing for Floors, Walls, and Roofs", using tight butt joints with edges true and plumb. Back vertical joints as required to keep edges flush. Provide thicknesses shown, or if not shown, provide thickness recommended by APA.

E. Fastening:

1. Securely attach carpentry work to substrates by anchoring and fastening as shown or necessary, or required by recognized standards.

2. Nail as appropriate to the particular item according to nailing tables in the applicable edition of the Uniform Building Code.

3. Use common wire nails except as otherwise indicated. Use finish nails for finish work.

4. Select fasteners that will not penetrate where opposite side will be exposed to view or receive finish materials.

5. Pre drill as necessary to prevent splitting. Do not lubricate fasteners where friction is essential to develop strength.

6. Screw, do not drive, wood screws and lag bolts, except that they may be started by driving and then screwed home.

F. Other Items:

Install other items in compliance with original design, approved submittals, and applicable codes and regulations. Anchor all work into place for long life under hard use.

3.02 CLEAN UP

Remove all work related debris and at completion leave work room clean.

END OF SECTION

SECTION 07 21 30 BATT INSULATION

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Fiber Glass Loosefill Insulation.
2. Batt insulation for filling crevices in exterior wall and roof assemblies.

B. Related Work Described Elsewhere:

1. Joint Sealants Section 07 90 00

C. References:

American Society for Testing and Manufacturing (ASTM) :

1. C518-85 Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter.
2. C665-86 Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
3. E84-87 Surface Burning Characteristics of Building Materials.

1.02 SYSTEM DESCRIPTION

A. Provide thermal barrier at building enclosure elements were designated in drawings.

1.03 SUBMITTALS

A. Submit manufacturer's product data and installation instructions under provision of Section 013400.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Owens Corning.
B. Manville
C. CertainTeed.

2.02 INSULATION MATERIALS

A. Fibrous Insulation:

1. Thermal insulation: ASTM C665 unfaced, friction fit blanket. Thickness indicated, 1 lb. density.

2. Minimum 'R' value per inch of thickness: 3 per ASTM C518.

3. Flame Spread: 25 maximum per ASTM E84.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify adjacent materials are dry and ready to receive installation.

B. Verify mechanical and electrical services within walls have been installed and tested.

3.02 INSTALLATION

A. Install batt insulation in accordance with manufacturer's instructions.

B. Install batt insulation in exterior wall spaces between framing members and elsewhere as indicated, without gaps or voids.

C. Staple wall insulation at top to prevent sagging.

D. Trim insulation neatly to fit spaces. Use batts free of damage.

E. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.

F. Stuff loose insulation into miscellaneous voids and cavity spaces as indicated. Compact to approximately 40 percent of normal volume.

END OF SECTION

SECTION 07 46 40 COMPOSITE SIDING AND TRIM

PART 1 GENERAL

1.01 SCOPE

A. Furnish and install Composite Siding, Trim, and accessories where shown on drawings or as specified herein.
B. Coordinate the section with interfacing and adjoining work for proper sequence of installation.

1.02 RELATED SECTIONS

A. Rough Carpentry: Section 06 10 00

1.03 QUALITY ASSURANCE

A. Refer to 013400- Shop Drawings, Product Data & Samples.

1. Submit 6" x 6" pieces of claddings in texture and widths shown and specified herein.

2. Submit specifications, installation data, and other pertinent manufacturer's literature.

1.04 JOB CONDITIONS

A. Nominal 2" x 6" wood framing selected for minimal shrinkage and complying with local building codes, including the use of weather-resistive barriers and vapors barriers where required. Minimum 1 1/2" face and straight, true, of uniform dimensions and properly aligned.

B. Install weather-resistive barriers and cladding to dry surfaces.

C. Repair any punctures or tears in the weather-resistive barrier prior to the installation of the siding.

D. Protect siding from other trades.

1.05 WARRANTY

A. COMPOSITE SIDING AND TRIM: Provide CertainTeed limited product warranty against manufacturing defects in all CertainTeed products for 50 years.

B. ColorMax Finish: Provide a 15-year limited coating warranty and a 15- year SureStart limited labor warranty for coating application (not prorated year 1 and 2).

PART 2 PRODUCTS

2.01 COMPOSITE SIDING AND TRIM

A. Non-asbestos fiber-cement siding to comply with ASTM Standard Specification C1186 Grade II, Type A.

B. Siding to meet the following building code compliance:

1. National Evaluation Report No. NER 405 (BOCA, ICBO, SBCCI)

2. Non- asbestos fiber-cement siding to be non-combustible when tested in accordance with ASTM test method E136.

C. Types for Applications

1. Siding - CertainTeed: Cedar Textured 7 ¼ (actual) 6" exposure
Assume 2 siding colors, as selected by Architect from manufacturer's standard colors.

2. Trim - CertainTeed Cedar Texture 3 ½" (actual), 7 ¼" (actual) and 11 ¼" (actual)
Thickness: 1" (actual)
Color: Assume 2 siding colors, as selected by Architect from manufacturer's standard colors.

2.03 FASTENERS

A. Wood Framing: 6d common corrosion resistant siding nails.

2.04 FINISH

A. Product: ColorMax by CertainTeed - Assume two colors, per architect

B. Finish unprimed siding with a minimum one coat high quality, alkali resistant primer and one coat of either, 1—percent acrylic or latex or oil based, exterior grade topcoats or two coats high quality alkali resistant 100 percent acrylic or latex, exterior grade topcoat within 90 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.

C. Finish factory primed siding with a minimum of one coat of high quality 100 percent acrylic or latex or oil based exterior grade paint within 180 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Correct conditions detrimental to timely and proper completion of work.

3.02 INSTALLATION

A. CertainTeed Siding

1. Face nail to sheathing.

2. Locate splices at least 12" away from window and door openings.

3. Wind Resistance: Where a specified level of wind resistance is required CertainTeed lap siding is installed to framing members and secured with fasteners described in Table No. 2 in the National Evaluation Service Report No. NER-405.

END OF SECTION

SECTION 07 55 00 - EPDM ROOFING

PART 1 GENERAL

1.01 DESCRIPTION

A. The project consists of installing Fully Adhered Roofing System as outlined below:

Apply the Fully Adhered EPDM Roofing System over the existing roof decks as described in the contract documents.

1.02 EXTENT OF WORK

A. Provide all labor, material, tools, equipment, and supervision necessary to complete the installation of a .090 inch thick external reinforced EPDM membrane Fully Adhered Roofing System including flashings and insulation as specified herein and as indicated on the drawings in accordance with the manufacturer's most current specifications and details.

B. The roofing contractor shall be fully knowledgeable of all requirements of the contract documents and shall make themselves aware of all job site conditions that will affect their work.

C. The roofing contractor shall confirm all given information and advise the building owner, prior to bid, of any conflicts that will affect their cost proposal.

D. Any contractor who intends to submit a bid using a roofing system other than the approved manufacturer must submit for pre-qualification in writing fourteen (14) days prior to the bid date. Any contractor who fails to submit all information as requested will be subject to rejection. Bids stating "as per plans and specs" will be unacceptable.

1.03 SUBMITTALS

A. Prior to starting work, the roofing contractor must submit the following:

1. Shop drawings showing layout, details of construction and identification of materials.

2. Sample of the manufacturer's Membrane System Warranty.

3. Submit a letter of certification from the manufacturer which certifies the roofing contractor is authorized to install the manufacturer's roofing system and lists foremen who have received training from the manufacturer along with the dates training was received.

4. Certification from the membrane manufacturer indicating the fasteners are capable of providing a static backout resistance of 10 inch pounds minimum is required.
5. Certification of the manufacturer's warranty reserve.

B. Upon completion of the installed work, submit copies of the manufacturer's final inspection to the specifier prior to the issuance of the manufacturer's warranty.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in

sufficient quantity to permit work to continue without interruption.

B. Comply with the manufacturer's written instructions for proper material storage.

1. Store materials, except membrane, between 60F and 80F in dry areas protected from water and direct sunlight. If exposed to lower temperature, restore to 60F minimum temperature before using.

2. Store materials containing solvents in dry, well ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.

C. Insulation must be on pallets, off the ground and tightly covered with waterproof materials.

D. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.

1.05 WORK SEQUENCE

A. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.

B. Do not disrupt activities in occupied spaces.

1.06 USE OF THE PREMISES

A. Before beginning work, the roofing contractor must secure approval from the building owner's representative for the following:

1. Areas permitted for personnel parking.
2. Access to the site.
3. Areas permitted for storage of materials and debris.
4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.

B. Interior stairs or elevators may not be used for removing debris or delivering materials, except as authorized by the building superintendent.

1.07 EXISTING CONDITIONS

A. If discrepancies are discovered between the existing conditions and those noted on the drawings, immediately notify the owner's representative by phone and solicit the manufacturer's approval prior to commencing with the work. Necessary steps shall be taken to make the building watertight until the discrepancies are resolved.

1.08 JOB SITE PROTECTION

A. The roofing contractor shall adequately protect building, paved areas, service drives, lawn, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metal (properly secured) as necessary for protection and remove protection material at completion. The contractor shall repair or be responsible for costs to repair all property damaged during the roofing

application.

B. During the roofing contractor's performance of the work, the building owner will continue to occupy the existing building. The contractor shall take precautions to prevent the spread of dust and debris, particularly where such material may sift into the building. The roofing contractor shall provide labor and materials to construct, maintain and remove necessary temporary enclosures to prevent dust or debris in the construction area(s) from entering the remainder of the building.

C. Do not overload any portion of the building, either by use of or placement of equipment, storage of debris, or storage of materials.

D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.

E. Take precautions to prevent drains from clogging during the roofing application. Remove debris at the completion of each day's work and clean drains, if required. At completion, test drains to ensure the system is free running and drains are watertight. Remove strainers and plug drains in areas where work is in progress. Install flags or other telltales on plugs. Remove plugs each night and screen drain.

F. Store moisture susceptible materials above ground and protect with waterproof coverings.

G. Remove all traces of piled bulk materials and return the job site to its original condition upon completion of the work.

1.09 SAFETY

A. The roofing contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related. Safety shall be the responsibility of the roofing contractor. All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe environment for the facility's occupants including staff, visitors, customers and the occurrence of the general public on or near the site.

1.10 WORKMANSHIP

A. Applicators installing new roof, flashing and related work shall be factory trained and approved by the manufacturer they are representing.

B. All work shall be of highest quality and in strict accordance with the manufacturer's published specifications and to the building owner's satisfaction.

C. There shall be a supervisor on the job site at all times while work is in progress.

1.11 QUALITY ASSURANCE

A. The manufacturer must have a minimum of 20 years experience in the manufacturing of vulcanized thermal set sheeting.

B. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturer's current specifications and details.

C. The roofing system must be installed by an applicator authorized and trained by the manufacturer in compliance with shop drawings as approved by the manufacturer. The roofing applicator shall be thoroughly experienced and upon request be able to provide evidence of having at least five (5) years

successful experience installing single-ply EPDM roofing systems and having installed at least one (1) roofing application or several similar systems of equal or greater size within one year.

E. Provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified. Provide at least one thoroughly trained and experienced superintendent on the job at all times roofing work is in progress.

F. There shall be no deviations made from this specification or the approved shop drawings without the prior written approval of the specifier. Any deviation from the manufacturer's installation procedures must be supported by a written certification on the manufacturer's letterhead and presented for the specifier's consideration.

G. Upon completion of the installation, the applicator shall arrange for an inspection to be made by a non-sales technical representative of the membrane manufacturer in order to determine whether or not corrective work will be required before the warranty will be issued. Notify the building owner seventy-two (72) hours prior to the manufacturer's final inspection.

1.12 JOB CONDITIONS, CAUTIONS AND WARNINGS

Refer to Manufacturers Fully Adhered Roofing System specification, - Application, for General Job Site Considerations.

A. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.

B. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.

C. When loading materials onto the roof, the Authorized Roofing Applicator must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.

D. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.

E. Proceed with work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.

F. Provide protection, such as 3/4 inch thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.

G. The surface on which the insulation or roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.

H. New roofing shall be complete and weathertight at the end of the work day.

I. Contaminants such as grease, fats and oils shall not be allowed to come in direct contact with the roofing membrane.

1.13 WARRANTY

A. Provide manufacturer's 20 year Membrane System Warranty covering both labor and material with no

dollar limitation. The maximum wind speed coverage shall be peak gusts of 120 mph measured at 10 meters above ground level.

B. Pro-rated System Warranties shall not be accepted.

C. Evidence of the manufacturer's warranty reserve shall be included as part of the project submittals for the specifier's approval.

PART 2 PRODUCTS

2.01 GENERAL

A. The basis of design for all components of the specified roofing system shall be products of Carlisle SynTec Incorporated or accepted by the Architect as compatible.
   i. Firestone Building Products.

B. Unless otherwise approved by the specifier and accepted by the membrane manufacturer, all products (including insulation, fasteners, fastening plates and edgings) must be manufactured and supplied by the roofing system manufacturer and covered by the warranty.

C. Submit written request for approval of substitution per section 016000.

2.02 MEMBRANE

Furnish Sure-Seal externally reinforced with fabric EPDM (Ethylene, Propylene, Diene Terpolymer) conforming to the minimum physical properties of ASTM D4637. The membrane shall be manufactured in a single panel with no factory splices to reduce splice intersections.

1. Thickness: 0.090 Inch.
2. Sheet Width: 76 inch minimum; factory-fabricate into largest sheets possible.
3. Color: Black
4. Tensile Strength: 1400 psi, measured in accordance with ASTM D412.
5. Ultimate Elongation: 400 percent, measured in accordance with ASTM D412.
6. Tear Strength: 185 lbf/in, measure in accordance with ASTM D624.
7. Brittleness Temperature: -75 deg. F, measured in accordance with ASTM D746.
8. Seaming Materials: As recommended by membrane manufacturer.

2.03 RECOVERY BOARDS

A. Recovery Board: Provide glass mat faced gypsum panels meeting ASTM C1177/C1177M fire resistance type over all insulation.
   1. Acceptable Manufactureers: Georgia-Pacific
   2. Thickness: 5/8”

2.04 INSULATION

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer’s standard sizes totallying the R-Value indicated on drawings.

B. Molded-Polystyrene Board (EPS) Insulation: ASTM C 578 Type II, 1.35-lb/cu. ft. minimum density. The R-Value for calculation purposes for Type II EPS insulation is to be R-4.55 per inch thickness, measured at 40 degrees F.

   1. Available Manufacturers:

a. Insulfoam, Inc.

b. Approved equal.

2. Thickness: As indicated

3. Maximum dimension: 4 feet by 4 feet

C. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt facer on both major surfaces. The R-value for calculation purposes for Polyisocyanurate insulation is to be R-5.0 per inch thickness.

1. Available Manufacturers:

a. Atlas Roofing Corporation.

b. Celotex Corporation.

c. Firestone Building Products Company.

d. Hunter Panel, Inc.

e. Johns Manville International, Inc.

f. RMAX

g. Approved equal.

2. Thickness: As indicated

3. Maximum dimension 4 feet by 4 feet

D. Cellulosic-Fiber Board Insulation: ASTM C 208, Type II, Grade 1, fibrous-felted wood fiber or other cellulosic-fiber and water-resistant binders, asphalt impregnated on all six surfaces, chemically treated to resist deterioration.

1. Available Manufacturers:

a. CMI-Temple Inland.

b. Firestone Building Products Company.

c. Georgia-Pacific Corporation.

d. Structoduck.

e. Approved equal.

E. Tapered Insulation: Provide factory-tapered insulation boards fabricated to form a minimum finished slope of 1/8-inch per 12 inches (1:48), unless otherwise indicated.

1. Minimum thickness: 1/2-inch

F. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where

indicated for sloping to drain. Fabricates to slopes as indicated.

2.05 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.

B. Insulation Cant Strips: ASTM C 728, perlite insulation board; OR –ASTM C 208 Type II, Grade 1, cellulosic-fiber insulation board.

2.06 ADHESIVES AND CLEANERS

All products shall be furnished by Carlisle and specifically formulated for the intended purpose.

A. Bonding Adhesive: Sure-Seal 90-8-30A

B. Splicing Cement: Sure-Seal EP-95 Splicing Cement

C. Splice Tape and Primer: Sure-Seal SecurTAPE and HP-250 Primer

D. Cleaning Solvent: Sure-Seal Splice Cleaner or Weathered Membrane Cleaner

E. Internal seam sealant: Sure-Seal In-Seam Sealant

F. External seam sealant: Sure-Seal Lap Sealant

G. Sealer: Sure-Seal Pourable Sealer

2.07 VAPOR BARRIER

A. Carlisle VapAir Seal 725TR Air & Vapor Barrier: 725TR is a 40-mil composite consisting of 35-mils of self-adhering rubberized asphalt factory laminated to a 5-mil polyethylene film with an adhesion textured surface. 725TR roll dimensions are 39” x 100’ and the product is applied after priming an acceptable substrate with CCW 702, 702-LV or Cav-Grip III primer.

2.08 RELATED MATERIALS

A. Povide all Carlisle approved related flashings, adhesives and to provide a watertight assemble qualifying for the above stated warranty reqirements.

2.09 METAL EDGING AND MEMBRANE TERMINATIONS

A. Provide all metal edging and terminations as defined in drawings. Color as selected by Architect.

PART 3 EXECUTION

3.01 GENERAL

A. Comply with the manufacturer's published instructions for the installation of the membrane roofing system including proper substrate preparation, jobsite considerations and weather restrictions.

B. Position sheets to accommodate contours of the roof deck and shingle splices to avoid bucking water.

3.02 INSULATION PLACEMENT

A. Install insulation or membrane underlayment over the substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch. Stagger joints both horizontally and vertically if multiple layers are provided.

B. Secure insulation to the substrate with the required adhesive in accordance with the manufacturer's specifications.

3.03 MEMBRANE PLACEMENT AND ATTACHMENT

A. Unroll and position membrane without stretching. Allow the membrane to relax for approximately 1/2 hour prior to application. Provide and secure both perimeter and field membrane sheets in accordance with the manufacturer's most current specifications and details.

B. Secure the membrane with Carlisle approved adhesion system.

D. Install adjoining membrane sheets in the same manner in accordance with the manufacturer's specifications.

3.04 MEMBRANE SPLICING (Adhesive Splice)

A. Membrane splices must be a minimum of 6 inches wide where mechanical attachment is required along the length of the membrane. Membrane splices at the end roll sections (the width of the membrane) must be a minimum of 3 inches wide.

B. When using PRE-KLEENED Reinforced EPDM Membrane, cleaning the splice area is not required unless contaminated with field dirt, adhesive or other residue. To remove accumulated dirt, footprints, etc., scrub the membrane sheets with Splice Cleaner or HP-250 Primer.

C. Apply Splicing Cement and In-Seam Sealant in accordance with the manufacturer's specifications and roll the top sheet onto the mating surface.

D. Roll the splice with a 2 inch wide steel roller and wait at least 2 hours before applying Lap Sealant to the splice edge following the manufacturer's requirements.

E. Field splices without In-Seam Sealant must be overlaid with uncured flashing.

3.05 MEMBRANE SPLICING (Tape Splice)

A. Tape splices where fastening plates are located (along the length of the membrane) must utilize 6 inch wide Splice Tape. Tape splices at end roll sections (along the width of the membrane without fastening plates) shall utilize 3 inch wide Splice Tape.

B. Overlap adjacent sheets and mark a line 1/2 inch out from the top sheet.

C. Apply Sure-Seal HP-250 Primer to splice area.

D. Position Splice Tape onto bottom membrane sheet with the edge of the release film along the marked line.

E. Remove the release film and press the top sheet onto the tape using hand pressure. Roll the splice with a 2 inch wide steel roller.

F. Install a 6 inch wide section of Pressure-Sensitive Flashing or Elastoform Flashing over all field splice intersections and seal edges of flashing with Lap Sealant.

G. The use of Lap Sealant with tape splices is optional except at tape overlaps and cut edges of reinforced membrane where Lap Sealant is required.

3.06 FLASHING

A. Wall and curb flashing shall be cured EPDM membrane. Continue the deck membrane as wall flashing where practicable.

B. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edging/coping and roof drain applications.

3.07 WALKWAYS

A. Install walkways at all traffic concentration points (such as roof hatches, access doors, rooftop ladders, etc.) and all locations as identified on the specifier's drawing. Provide walkway mats covering drainage sump.

B. Adhere walkways to the EPDM membrane in accordance with the manufacturer's specifications.

3.08 DAILY SEAL

A. On phased roofing, when the completion of flashings and terminations is not achieved by the end of the work day, a daily seal must be performed to temporarily close the membrane to prevent water infiltration.

B. Use Sure-Seal Pourable Sealer or other acceptable membrane seal in accordance with the manufacturer's requirements.

3.09 CLEAN UP

A. Perform daily clean-up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.

B. Prior to the manufacturer's inspection for warranty, the applicator must perform a pre-inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.

END OF SECTION

SECTION 07 62 00 - FLASHING AND TRIM

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Roof copings, reglets and counterflashings.
2. Exterior door drip flashings.
3. Miscellaneous flashings.

B. Related Work Specified Elsewhere:

1. Composite Siding and Trim	Section 07 62 00
2. Joint Sealers	Section 07 90 00
3. Painting	Section 09 90 00

C. References:

1. American Society for Testing and Materials (ASTM):

a. A525-86 Steel Sheet, Zinc Coated, Galvanized by the Hot Dip Process.
b. B32-87 Solder Metal
c. D226-87 Asphalt Saturated Organic Felt Used in Roofing and Waterproofing.
d. D1187-82 Asphalt Based Emulsions for Use as Protective Coatings for Metal.

2. Federal Specifications (FS): O-F-506 Flux, Soldering, Paste and Liquid.

3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): SMACNA Architectural Sheet Metal Manual.

1.02 SYSTEM DESCRIPTION

A. Work of this Section is to physically protect composition or flexible roof flashing and building components from damage that would permit water leakage to building interior.

1.03 QUALITY ASSURANCE

A. Applicator: Company specializing in sheet metal flashing work with 3 years minimum experience.

1.04 SUBMITTALS

A. Submit shop drawings, product data, installation instructions, color sample, and samples under provisions of Section 013400.

B. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.

C. Provide 12 in. length of full sized sample of metal flashings illustrating typical external corner, internal corner, junction to vertical dissimilar surface, material and finish.

1.05 STORAGE AND HANDLING

A. Store products under provisions of Section 016200.

B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation.

C. Prevent contact with materials during storage which may cause discoloration, staining or damage.

1.06 PERFORMANCE AGREEMENT

A. Provide two year guaranty under provisions of Section 017500, substantially in the following form:

1. Inspect and make emergency repairs to defects and leaks in building flashings within 24 hours of notice by Owner. As soon as weather permits, make permanent repairs and restore effected area to standards of contract requirements. Work shall be done without additional cost to Owner, unless leaks were caused by abuse or unusual natural phenomena as lightning strikes or hurricane.

B. Provide 20 year manufacturer's finish warranty for prefinished items under provision of Section 017500.

PART 2 PRODUCTS

2.01 MATERIALS

A. Galvanized Sheet Stock: ASTM A446, Grade C minimum; coating designation G90 in conformance with A525, or 1.9 mil Zincalume coating composed of 45 percent zinc and 55 percent aluminum alloy by weight, per ASTM A792.

B. Counterflashings:

1. Manufactured: Provide counterflashings similar and equal to Springlok Flashing System as manufactured by Fry Reglet Corp. Flashing shall be made of 26 ga. galvanized steel. Pre-finish where exposed to view form exterior grade and elsewhere as indicated. Flashing shall have a 3 in. factory formed end lap. Provide with prefabricated flashing corners and accessories.

2. Fabricated: Provide counterflashings of galvanized steel as indicated, thickness shown. Pre-finish where exposed to view from exterior grade and elsewhere as indicated. Fabricate as specified below, to shapes shown and as required to maintain building watertight and weatherproof.

C. Copings: Provide copings of preformed, galvanized sheet stock as indicated, thickness shown. Fabricate as specified below, to shapes shown and as required to maintain building watertight and weatherproof.

2.02 ACCESSORIES

A. Fastener: Galvanized steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.

B. Underlayment: ASTM D266; No. 15 asphalt saturated roofing felt.

C. Metal Primer: FS TT-P-641.

D. Protective Backing Paint: Bituminous, conforming to ASTM D1187, Type A.

E. Sealant: Refer to Section 07900.

F. Solder: ASTM B32; 50/50 type.

G. Flux: FS O-F-506.

2.03 FABRICATION

A. Form section true to shape, accurate in size, square, and free from distortion or deflects.

B. Form pieces in longest practicable lengths. Minimum bend radius 2.5 times the thickness of the metal, unless more stringent requirements are specified by coating manufacturer. Form bends at room temperature.

C. Hem exposed edges on underside 1/2 in.; miter and rivet lap seam corners. Provide sealant in laps as specified in Section 07900.

D. Form material with cover plate seams.

E. Where indicated, and at all corner installations, solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.

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

G. Provide 24 gauge coping with 22 gauge continuous concealed cleats on exterior face and exposed screw fasteners on interior face, as shown.

2.04 FINISH

A. Shop prepare and prime exposed ferrous metal surfaces, including galvanized.

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

C. Exposed flashings at sloped glazing to match sloped glazing framing color.

D. Exposed flashings at louvers to match louver color.

E. Prefinishing of Sheet Stock:

1. Exterior surfaces of prefinished flashings shall have a shop applied baked-on epoxy primer (.2 mil) and a baked-on PVF 2 (Polyvinylidene Flouride) finish coat (.8 mil) equal to Glidden "Nubelar", DeSoto "Fluropon", Whittaker "Fluoroceram" and PPG "Duranar"; full 70% Kynar 500, totaling a nominal 1.0 mil dry film thickness.
2. Interior finish consists of .15 mil epoxy primer and .35 mil off-white backer, except match exterior surface finish where exposed.

G. Touch Up Finishes: Touch up finish or refinish hardware items and small scratches and abrasions on prefinished metal with an air dry fluorocarbon refinishing system or touch up system, similar and equal to ADS Kynar.

H. Back paint concealed metal surfaces and dissimilar metal contact surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

PART 3 EXECUTION

3.01 INSPECTION

A. Beginning of installation means installer accepts existing substrates.

3.02 PREPARATION

A. Field measure site conditions prior to fabricating work.

3.03 INSTALLATION

A. Install surface mounted reglets and accessories true to lines and levels, at wall/roof connections above top of base flashings.

1. Seal top of reglet as specified in Section 079000 and in accordance with reglet manufacturer's recommendations.

2. Place beads of sealant under holes. Prefinish reinforcing bars to match flashing. Anchor bars to substrate through flashing with round head bolts with neoprene washers into sleeve anchors, of metal compatible with flashing and with heads prefinished color to match flashing.

B. Secure flashings in place using concealed fasteners unless exposed specifically shown. Fastener size and type suitable for conditions of use. Provide sizes and spacings shown, and where not shown, provide in accordance with applicable requirements of SMACNA manual and FM 1-49 for Wind Zone 2 whichever is the more stringent for the application.

C. Provide butt joints between coping lengths with minimum 22 ga. cover plates and seal between cover plates and coping with two beads of polyisobutylene sealant each side (four rows of sealant total for each covered joint). Allow for expected expansion and contraction between coping lengths.

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

E. Seal metal joints watertight. Apply sealant between metal flashings as specified in Section 07900.

F. Conform to drawing details included in SMACNA manual where referenced or where applicable to conditions and not in conflict with Contract Documents.

END OF SECTION

SECTION 07 72 10 ROOF HATCH RAIL SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide factory-fabricated fixed hatch railing system.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product data.

B. Shop Drawings: Submit shop drawings including profiles, accessories, location, adjacent construction interface, and dimensions.

C. Warranty: Submit executed copy of manufacturer's standard warranty.

1.3 QUALITY ASSURANCE

A. Manufacturer: A minimum of 5 years experience manufacturing similar products.

B. Installer: A minimum of 2 years experience installing similar products.

C. Manufacturer's Quality System: Registered to ISO 9001:2008 Quality Standards including in-house engineering for product design activities.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's original packaging. Store materials in a dry, protected, well-vented area. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

1.5 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard warranty. Materials shall be free of defects in material and workmanship for a period of twenty-five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturer: Type Bil-Guard® Roof Hatch Railing System by The Bilco Company, P.O. Box 1203, New Haven, CT 06505, 1-800-366-6530, Fax: 1-203-933-8478, Web: www.bilco.com.

2.2 HATCH RAIL SYSTEM

A. Furnish and install where indicated on plans hatch rail system Model RL-NB. The hatch rail system shall be field assembled and installed (by others) per the manufacturer's instructions.

B. Performance characteristics:

1. High visibility safety yellow color shall be molded in.
2. Hatch rail system shall attach to the capflashing of the roof hatch and shall not penetrate any roofing material.
3. Hatch rail system shall satisfy the requirements of OSHA 29 CFR 1910.23 and shall meet OSHA strength requirements with a factor of safety of two.
4. UV and corrosion resistant construction with a twenty-five year warranty.
5. Self-closing gate shall be provided with hatch rail system.

C. Posts and Rails: Shall be round pultruded reinforced fire retardant yellow fiberglass treated with a UV inhibitor.

D. Hardware: Mounting brackets shall be ¼" (6mm) thick hot dip galvanized steel. Hinges and post guides shall be 6063T5 aluminum. Fasteners shall be Type 316 stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install products in strict accordance with manufacturer's instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work.

1. Test units for proper function and adjust until proper operation is achieved.
2. Repair finishes damaged during installation.
3. Restore finishes so no evidence remains of corrective work.

3.3 ADJUSTING AND CLEANING

A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION

SECTION 07 90 00 - JOINT SEALANTS

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Clean and prepare sealant substrate surfaces.
2. Sealant and backing.

B. Related Work Described Elsewhere:

1.	Flashing and Metal Trim	Section 07 62 00
2.	Sloped Glazing Assemblies	Section 08 44 33
3.	Glazing	Section 08 80 00

C. References:

1. American Society for Testing and Materials (ASTM):

a. C790-84 Recommended Practices for Use of Latex Sealing Compounds.
b. C804-83 Recommended Practices for Use of Solvent Release Type Sealants.
c. D1056-85 Flexible Cellular Materials - Sponge or Expanded Rubber.
d. D1565-81 (1986) Flexible Cellular Materials - Vinyl Chloride polymers and Copolymers (Open Cell Foam).
e. E119-83 Fire Tests of Building Construction Materials.

2. Federal Specifications (FS):

a. TT-S-001543 Sealing Compound, Silicone Rubber Base.
b. TT-S-001657 Sealing Compound, Single Component, Butyl Rubber Based, Solvent Release Type.
c. TT-S-00227 Sealing Compound: Elastromeric Type , Multi-Component.
d. TT-S-00230 Sealing Compound: Elastromeric Type, Single-Component.

1.02 SUBMITTALS

A. Submit product data and samples under provision of Section 013400.

B. Submit product data and samples of each sealant type and sealant colors.

C. Submit manufacturer's surface preparation and installation instructions under provisions of Section 013400.

1.03 EXTRA STOCK

A. Furnish tube or equivalent of each type of sealant used on this project under provisions of Section 017500.

B. Turn over to Owner's Representative at Substantial Completion and receive a receipt therefore.

PART 2 PRODUCTS

2.01 SEALANT MATERIALS

A. Silicone Sealant: Silicone base, single component, moisture curing, non-sagging, non-staining, non-bleeding; color as selected; conforming to the requirements of FS TT-S-001543A, Class A. Dow Corning 795 Sealant, GE Gesil N 2600, or Tremco Spectrum 2.

1. Dynamic Movement Capability + 50 percent.
2. Service Temperature Range -35 to +140 degrees F.
3. Shore A Hardness Range 15 to 35.

B. Polyurethane Sealant: Moisture curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging type; conforming to the requirements of FS TT-S-00230C, Type 11, Class A. Sonneborn Sonolastic NP II, Tremco Dymeric. Color as selected.

1. Dynamic Movement Capability + 25 percent.
2. Service Temperature Range -60 to +180 degrees F.
3. Shore A Hardness 20 to 35.

C. Butyl Sealant: Butyl rubber base, single component, conforming to requirements of FS TT-S-001657, Type 1; Shore A hardness of maximum 30; non-staining; non-bleeding; non-sagging; color as selected. Tremco Butyl Sealant, Pecora BC-158, or Sonneboren Butakauk.

D. Acrylic Sealant: Acrylic base, single component, solvent curing, capable of being continuously immersed in water, withstand movement of up to 7.5 percent of joint width and paintable. Tremco Acrylic Latex Caulk or Sonneborn Sonolac.

E. Accoustical Sealant: Conforming to ASTM C-919, Smoke & Sound Sealant. Tremco – Tremflex 834.

F. Sealant Tape: AAMA 804.1, Butyl-polyisobutylene preformed sealant, service temperature range -40 to 200 degrees F; color as selected; Tremco 440 tape, PTI 606, or acceptable substitute. Provide pre-shimmed where required.

G. Penetration Sealant: Conform to requirements of ASTM E119 or ASTM E 814; provide materials UL Listed with assembly and for equal rating. Seal walls and floors at pipe, conduit and cable penetrations. Where required for rating, provide with mineral wool of ceramic fiber forming material listed. Dow Corning 2000 Fire Stop Sealant, GS Pensil 851, or equal.

H. Sanitary Sealant: Dow Corning 786 mildew resistant silicone sealant of GE SCS 1702 Sanitary Sealant. Seal joints around plumbing fixtures.

I. Rated Joint Sealant: Conform to requirements of ASTM E119 or UL 263; provide material UL listed with assembly and for equal rating. Seal walls at control joints in 2 hour CMU or concrete walls. Where required for rating, provide with mineral wool or ceramic fiber forming material listed. Dow Corning 795, Tremco Dymeric, or equal.

J. Traffic Sealant: Two component, self-leveling type; conforming to the requirements of FS TT-S-00227E, Type I, Class A and ASTM C920 Type S, Grade P, Class 25, Use T; Sonneborn

Sonolastic Paving Joint Sealant, Tremco THC-900, "Chem-Calk 550" by Bostik, or equal. Color as selected.

K. Substitutions: Refer to Section 016300 for substitution procedures.

2.02 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Filler (Backer Rod): Round, open cell polyurethane foam rod; oversized 30 to 50 percent larger than joint width; compatible with joint sealer.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 JOB CONDITIONS

A. Verify joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by manufacturer.

B. Beginning of installation means installer accepts existing substrate.

3.02 PREPARATION

A. Clean, prepare, and size joints in accordance with manufacturer's instructions. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Verify that joint shaping materials and release tapes are compatible with sealant.

C. Examine joint dimensions and size materials to achieve required width/depth rations.

D. Use joint filler to achieve required joint width/depth rations. Provide neck dimension no greater than 1/3 joint width. Verify that joint backing and release tapes are compatible with sealant. Do not puncture backer rod.

E. Use bone breaker where joint backing is not used.

F. Perform preparation in accordance with ASTM C804 for solvent release and C790 for latex base sealants as applicable.

G. Protect elements surrounding the work of this Section from damage or disfiguration.

3.03 INSTALLATION

A. Perform work in accordance with ASTM C804 for solvent release and C790 for latex base sealants as applicable.

B. Install sealant per manufacturer's instructions.

C. Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature ranges.

D. Tool joints concave.

E. Joint: Free of air pockets, foreign embedded matter, ridges, and sags.

3.04 CLEANING AND REPAIRING

A. Clean work under provisions of Section 017100.

B. Clean adjacent soiled surfaces.

C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.05 PROTECTION OF FINISHED WORK

A. Protect finished installation under provisions of Section 015000.

B. Protect sealants until cured.

3.06 SCHEDULE

Location:	Type:
A. Concrete Masonry	
Exterior Control Joints	Polyurethane
Exterior Penetrations	Polyurethane
Interior Control Joints	Rated Joint Sealant
B. Vapor Retarder (Reference Section 07190)	
Floor/Roof	Acrylic
Penetrations	Acrylic
C. Flashing and Metal Trim (Ref. Section 07620)	
Metal/Metal (concealed)	Sealant Tape
Metal/Metal (exposed)	Silicone
Metal/CMU	Polyurethane
D. Windows (Ref. Sections 08520)	
Cap Glazing Bead	Silicone Weather Seal
Heel Glazing Bead	Silicone Structural Sealant
Metal/Metal Flashing lap Joints (concealed)	Tape Sealant
Exterior Perimeter/Metal (exposed)	Polyurethane
Exterior Perimeter/CUM (exposed)	Polyurethane
Sill/Flashing (concealed)	Butyl
Wood/Wood (exposed)	Polyurethane
Structural Glazing	Silicone
Interior Perimeter/Metal (exposed)	Acrylic

E. Door and Relite Frames

Interior Door and Relite Frames/Walls	Acrylic
Exterior Door and Relite Frames/CMU	Polyurethane
Interior Door and Relite Glazing	Tape Sealant (pre-shimmed)
Exterior Door and Relite Glazing	Tape Sealant (pre-shimmed)
Threshold	Butyl

F. Tile

Fixtures, Fittings and Equipment/Substrate	Sanitary Sealant
Accessories and Partitions/Substrate	Sanitary Sealant
Control/Expansion Joints	Polyurethane
Top of Base at Kitchen	Sanitary Sealant

G. Penetrations

Cable, Pipe, & Utility/Rated Floor/Wall	Penetration Sealant
Voids Between Rated Wall/Roof Sheathing	Penetration Sealant
In Acoustical Walls and Ceilings	Acrylic
H. P. Lam/Gypsum Board	Acrylic

I. Horizontal Interior Traffic Joints — Traffic Sealant

J. Provide sealants for other joints between material, assemblies, and components not scheduled above as specified in individual Sections. Where not indicated above or called out in individual Sections, provide acceptable sealant best suited to application.

END OF SECTION 07 90 00

SECTION 09 90 00 PAINTING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Prepare surfaces to receive finish.
2. Finish surfaces as indicated in schedule at end of this Section.

B. Related Work in Other Sections:

1.	Joint Sealants	Section 079000
2.	Mechanical Insulation	Section 230700

1.02 QUALITY ASSURANCE

A. Container labels shall include manufacturer's name, type of paint, stock number, color, label analysis, and where applicable instructions for reducing.

1.03 MOCKUP

A. Before proceeding with paint application, finish one complete surface of each color scheme required, clearly indicating selected colors, finish texture, materials, and workmanship. For spray application, paint surface not smaller than 100 sq.ft. as Project standard.

B. If accepted, sample area will serve as a minimum standard for work throughout Work.

1.04 SUBMITTALS

A. Submit materials list, product data, samples and manufacturer's instructions under provisions of Section 013400.

B. Submit manufacturer's product data on each paint material used on project.

C. Prepare 12 in. x 12 in. samples of finishes when requested by Owner. Transparent finishes on solid lumber may be 4 in. x 8 in. When possible, apply finishes on identical type materials to which they will be applied on job.

D. Identify each sample as to finish, formula, color name and number, sheen name, and gloss units.

E. Colors selected by Owner prior to commencement of work.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver paint materials under provisions of Section 016100 in sealed original labeled container.

B. Store and protect materials under provisions of Section 016200. Provide adequate storage facilities. Store paint materials at minimum ambient temperatures of 45 °F in well ventilated area.

C. Take precautionary measure to prevent fire hazards and spontaneous combustion.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture contents of surfaces are below following maximums: Refer to Section 015000.

1. Plaster and gypsum wallboard: 12 percent.
2. Concrete and Concrete Masonry Units: 12 percent.
3. Interior Located Wood : 12 percent
4. Exterior Located Wood: 19 percent

B. Ensure surface temperatures or the surrounding air temperature is above 45°F before applying finishes. Minimum application temperatures for latex paints for interior work are 60°F and 50°F for exterior work. Minimum application temperature for varnish finishes is 75°F.

1. Do not paint exterior surfaces after September 30th unless surrounding are temperature is above 45°F.

C. Provide adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 45°F, and 75°F, as applicable, for 24 hours before, during and 48 hours after applications of finishes.

D. Provide minimum 25 foot candles illumination on surfaces to be finished.

1.07 MAINTENANCE DATA

A. Submit maintenance data under provisions of Section 017300.

B. Indicate cleaning methods, cleaning solutions recommended, and stain removal methods recommended.

1.08 EXTRA STOCK

A. Furnish extra stock under provisions of Section 017500. Leave on premises, where directed by Owner, not less than one gallon each type and color used.

B. Tightly seal and clearly label containers for identifications.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Columbia Paints
B. Sherman Williams
C. ICI Paints
D. Glidden Coatings and Resins
E. Parker Paints
F. Substitutions: Under provisions of Section 016300.

2.02 PAINT AND ENAMEL MATERIALS

A. Paint and Enamel: Type and brand listed as manufactured by ICI Paints, unless otherwise noted.

1. Owner's review of other acceptable manufacturer's products may include reference to "Architectural Specification Manual" published by Specifications Services and the Washington State Council Painting and Decorating Contractors of America. Provide first line materials.

B. Paint Accessory Materials: Linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified shall be of high quality and acceptable manufacturer.

C. Paint: Ready-mixed except field catalyzed coatings. Pigments fully ground maintaining a soft paste consistency, readily and uniformly dispersed to complete homogeneous mixture.

D. Paint shall have good flowing and brushing properties and dry or cure free of streaks and sags.

2.03 FINISHES

A. Refer to surface finish schedule at end of this Section.

B. Provide finish for all exposed materials factory primed or unfinished, unless specifically stated as not requiring finish.

2.04 PAINT SYSTEMS

A. INTERIOR PAINT SYSTEMS: (BASED ON ICI PAINTS REFERENCE #'S, UNLESS NOTED OTHERWISE)

1. ON DRYWALL - IPS 10 (GENERAL DRYWALL)
COLOR: ICI - TO BE DETERMINED BY ARCHITECT

a. FIRST COAT: ICI NO. 1260 ULTRA HIDE AIRLESS HIGH BUILD LATEX FLAT PRIMER/FINISH
b. FINISH COAT: ICI NO. 1403 ULTRA EGGSHELL INTERIOR ACRYLIC WALL AND TRIM ENAMEL

B. EXTERIOR PAINT SYSTEMS:

1. EXTERIOR COMPOSITE TRIM (EPS 10)
COLOR: ICI- TO BE DETERMINED BY ARCHITECT

a. PRIME COAT: ICI ULTRA-HIDE DURUS EXTERIOR PRIMECOAT LATEX (2010)
b. FIRST COAT: ICI DECRA SHIELD EXTERIOR 100% ACRYLIC SATIN FINISH
c. SECOND COAT: ICI ULTRA HID DURUS EXTERIOR ACRYLIC SATIN FINISH

2. EXTERIOR GALVANIZED AND FURROUS METAL SURFACES (EPS 20)
COLOR: ICI- TO BE DETERMINED BY ARCHITECT

a. FIRST COAT: ICI DEVOE COATINGS NO. 4160 DEVGUARD PRIMER
b. SECOND COAT: ICI NO. 2406 DULUX PROFESSIONAL EXTERIOR SEMI-GLOSS FINISH

PART 3 EXECUTION

3.01 INSPECTION

A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing to Owner, conditions that may potentially affect proper application. Do not commence until such defects have been properly corrected.

B. Properly correct defects and deficiencies in surfaces which may adversely affect work of this Section.

C. Beginning of installation means installer accepts existing substrates.

3.02 PROTECTION

A. Adequately protect other surfaces from paint and damage. Repair damage resulting form inadequate, and unsuitable protection.

B. Use sufficient drop cloths, shields, and protective equipment to prevent spray and droppings from fouling surfaces not being painted, surfaces within storage and preparation area.

C. Place cotton waste, cloths, and material which may constitute fire hazards, in closed metal containers and remove daily from site.

D. Prior to painting operations, remove electrical plates, surface hardware, fittings and fastenings. Carefully store, clean, and replace on completion of work in each area. Do not use solvent to clean hardware with permanent lacquer finish.

3.03 PREPARATION

A. Remove mildew, by scrubbing with solutions of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry completely.

B. Remove contamination from gypsum board surfaces and prime to show defects, if any. Paint after defects have been remedied.

C. Remove surfaces contamination and oils from zinc coated surface and prepare for priming in accordance with metal manufacturer's recommendations.

D. Remove dirt, loose mortar, scale, powder and other foreign matter from concrete and unit masonry surfaces to be painted. Remove oil and grease with solutions of tri-sodium phosphate; rinse well and allow to thoroughly dry.

E. Remove grease, rust, scale, dirt, and dust from steel and iron surfaces. Where heavy coatings of scale are evident, remove by wire brushing, sandblasting, or other necessary method. Ensure steel surfaces are satisfactory before painting.

F. Clean unprimed steel surfaces by washing with solvent. Apply treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned. Prime surfaces to indicate defects. Paint after defects have been remedied.

G. Sand and scrape shop primed steel surfaces to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

H. Galvanized Metals:

1. Solvent clean with toluol, xylol, or lacquer thinner to remove oils, grease and other contaminants. Don not use paint thinner or turpentine.

2. Use phosphoric acid based, etching type, surface treatment compatible with painting system materials. Follow surface treatment manufacturer's instructions.

3. Where conditions require, use strong acid treatment or sand blasting to prepare galvanized surfaces scheduled to receive paint finish.

I. Wipe off dust and grit from miscellaneous wood items and millwork prior to priming. Sand wood, scheduled to receive transparent finish, to unblemished condition. Visible sanding scratches are unacceptable. Spot-coat knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried, and sand between coats. Remove factory applied sealers containing wax from glue laminated members finished under this Section by solvent wiping and sanding before coating. Back prime interior and exterior woodwork.

3.04 APPLICATIONS

A. Apply products in accordance with manufacturer's instructions.

B. Apply each coat to uniform finish, at proper consistency.

C. Tint each coat of paint slightly darker than preceding coat unless otherwise accepted by Owner's Representative.

D. Sand lightly between coats to achieve required finish.

E. Do not apply finishes on surfaces not sufficiently dry.

F. Allow each coat of finish to dry before applying following coat, unless directed otherwise by manufacturer.

G. Where clear finishes are required, tint fillers to match wood. Work fillers well into grain before set. Wipe excess from surfaces.

H. Prime top and bottom edges of hollow metal doors with enamel undercoat.

I. Prime back surfaces of interior and exterior woodwork with primer paint.

J. Prime back surfaces of interior wood work scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

K. Colors:

1. Anticipate maximum 3 field colors and 4 accent colors for paint and enamel systems.

2. Anticipate maximum 3 field colors and no accent colors for epoxy paint systems. Refer to Section 09650 for gym floor striping.

3. Anticipate maximum 1 field color and no accent colors for each of the other paint and stain systems.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Remove grilles, covers, and access panels for mechanical and electrical systems for locations and paint separately.

B. Finish paint primed equipment to color selected.

C. Paint interior surfaces of air ducts, convector and baseboard heating cabinets visible through grilles and louvers with one coat flat black paint, to limit of sight line.

1. Paint dampers exposed immediately behind louvers, grilles, convector and baseboard cabinets to match face panels.

D. Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment.

E. Paint electrical panel boards and frames. In locations other than electrical/mechanical rooms, paint color to match adjacent wall surfaces.

3.06 CLEANING

A. As work proceeds and upon completion, promptly remove paint spills, splashes, and spatters.

B. During progress of work keep premises free from unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Upon completion of work leave premises neat and clean.

END OF SECTION

SECTION 32 12 16 ASPHALT PAVING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work covered by these Specifications consists of providing all plant, labor, equipment supplies, material, transportation, handling, and storage, and performing all operations necessary to complete the construction of base course and hot mix asphalt concrete pavement consisting of one or more courses.

1.02 REFERENCE SPECIFICATIONS

All work in this section shall be in conformance to the "Standard Specifications for Highway Construction, 2020 Edition" of the Alaska Department of Transportation and Public Facilities (ADOT&PF), Section 401- Asphalt Concrete Pavement, and Section 703 – Aggregates, and as described in this Section.

1.03 REFERENCE STANDARDS

A. Testing Standards for Asphalt Concrete Pavement

1. Cores: ASTM D979-15. "Sampling Bituminous Paving Mixtures".

2. Core Density: ASTM D2726-17. "Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures".

3. Thickness: ASTM D3549-11. "Thickness and Height of Compacted Bituminous Paving Mixture Specimens".

4. Density: Alaska Test Method (ATM) 409. “Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)”.

4. Nuke Density: ASTM D2950-14. "Density of Bituminous Concrete in Place by Nuclear Methods".

5. Asphalt Content: ASTM D4125-10. "Asphalt Content of Bituminous Mixtures by the Nuclear Method".

6. Gradation: ASTM C136-14. "Sieve Analysis of Fine and Coarse Aggregates".

7. Marshall Analysis (Stability): ASTM D2726-17. "Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures”.

8. Extraction: ASTM D2172-17. "Quantitative Extraction of Asphalt Binder from Asphalt Mixtures".

1.04 SUBMITTALS

A. Leveling Course: The Contractor, at his expense, shall submit for approval, a gradation test, in accordance with ASTM D-422.

B. Asphalt Concrete: The Contractor, at his expense, shall submit for approval, a Job Mix formula (with accompanying curves) within the limits established by the reference specifications, for the mix designated by this Contract. The Contractor shall also submit a certification that all materials provided under this project comply with the Job Mix formula and the project specifications.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Asphalt Concrete Pavement

Asphalt Concrete shall meet the requirements of ADOT&PF Class 'A' with Type II Aggregate.

B. Leveling Course

Materials furnished by the Contractor for use as Leveling Course shall be graded within the limitations delineated below:

Leveling Course

U. S. Std. Sieve Size	Cumulative % Passing By Weight
1"	100
3/4"	70-100
3/8"	50-80
#4	35-65
#8	20-50
#50	8-28
#200	*2-6

*In addition to the grading limits stipulated above, fractions passing the #200 sieve shall not be greater than seventy-five percent (75%) of the fractions passing the #50 sieve.

Course Aggregate: The coarse aggregate material conforming to the requirements specified above shall have a percentage of wear not to exceed thirty-five (35) after five hundred (500) revolutions, as determined by the current requirements of ASTM C-131. It shall consist of angular fragments reasonably uniform in density and quality, and reasonably free from thin and elongated pieces, dirt, and other objectionable material. At least fifty percent (50%) of the coarse aggregate particles shall have two or more mechanically fractured faces.

Fine Aggregate: The fine aggregate shall consist of material free of organic or other objectionable matter. The fine aggregate, either naturally combined with the coarse aggregate or separately obtained and mixed therewith, shall be of such character that the composite material will conform to the gradation and other requirements specified.

PART 3 - EXECUTION

3.01 TESTING

A. Compaction tests shall be taken on at the average rate of one test per 5,000 square feet of area for both the Base Course and the Asphalt Pavement. Failing tests shall be retested at no additional cost to the Owner.

B. Asphalt content and gradation tests shall be taken for the Asphalt Pavement at the average rate of one test per 5,000 square feet of area.

3.02 CONSTRUCTION STAKING

A. The Contractor shall provide construction staking (blue tops) for establishing proper grades on the leveling course on a nominal 50 ft grid plus all breaks in grade unless approved otherwise by the Engineer.

3.03 LEVELING COURSE

A. Preparation of Subbase

Subbase preparation shall consist of dressing, shaping, wetting, and compacting of the subbase to a minimum density of ninety-five percent (95%). Surfaces shall be cleaned of all foreign substances and debris. Any ruts or soft yielding spots that may appear in the subbase surface shall be corrected by loosening, removing and adding approved material, reshaping, and recompacting the affected areas to the line, grade, and to the specified density requirements.

B. Placement

The approved leveling course material shall be deposited and spread in a uniform layer to the required contour and grades and to such loose depth that when compacted to the density required will achieve the specified thickness. The material shall be spread uniformly on the prepared subbase from moving vehicles or spreading boxes, then leveled to the required contour and graded with blade graders. Portions of the layer which become segregated in spreading shall be remixed to the required gradation.

C. Compacting

The leveling course shall be compacted to a minimum of ninety-five percent (95%) of maximum density. In all places not accessible to the rolling equipment, the mixture shall be compacted with tamping equipment. Blading, rolling and tamping shall continue until the surface is smooth

and free from waves and inequalities. If at any time the mixture is excessively moistened by rain, it shall be aerated by means of blade graders, harrows or other approved equipment until the moisture content is such that the surface can be recompacted and finished as above. The finished leveling course shall be maintained by the Contractor in the above condition until the pavement is applied.

D. Smoothness Test

The surface of the leveling course, when finished, shall not show any deviation in excess of three-eighths inch (3/8”) when tested with a ten foot (10’) straightedge applied parallel with, and at right angles to, the centerline of the area to be paved. Any deviation in excess of this amount shall be corrected by loosening, adding, or removing material and reshaping and compacting to satisfy the above requirement. Contractor shall obtain written approval from the Engineer for the final leveling course grade prior to pavement placement.

3.04 ASPHALT PAVEMENT

A. Weather Limitations

1. Asphalt concrete mixture shall not be placed when it is raining or when rain is imminent, on a saturated surface, on an unstable/yielding roadbed, when the base material is frozen, or when weather conditions prevent proper handling or finishing of the mixture.

2. No mix shall be placed when water is puddled or standing on the surface of base course.

3. Asphalt concrete mixture shall not be placed unless the surface temperature is forty-five degrees (45°) Fahrenheit or warmer and the ambient air is at least thirty-two degrees (32°) Fahrenheit and not descending. Air temperature shall be measured in the shade away from heat sources at the paving site. provided hot-mix asphalt shall be delivered continuously to the paver at temperatures between 250 and 325 degrees Fahrenheit.

B. Preparation of Area to be Paved

1. The area to be paved shall be true to line and grade, having a smooth dry, compacted surface prior to the start of paving operations. The area to be paved shall be free from all loose asphalt and foreign material.

2. Contractor shall notify the Owner’s Representative, a minimum of twenty-four (24) hours prior to paving, that the newly constructed, rotomill planed, or existing surface, has been prepared in conformance with the Drawings and Specifications and are ready to be paved. The Owner’s Representative shall inspect the grade through the use of string line, straightedge, levels, or any other means necessary. Upon determining the grade that has been proposed for paving is in conformance with the Drawings and Specifications, Engineer will provide written authorization for the Contractor to proceed with the paving. The Contractor shall not initiate paving prior to receiving written authorization to proceed.

3. The surface of the Leveling Course, when finished, shall not demonstrate any deviation in excess of three-eighths inch in ten feet (3/8" in 10') parallel with, and at right angles to, the centerline, or more than five-eighths inch (5/8") total from centerline to face of curb of the area to be paved. Any deviation in excess of this amount shall be corrected by loosening, adding, or removing material and reshaping and compacting to satisfy the above requirement.

4. Existing paved surfaces shall be cleaned of loose material by sweeping with a power broom, supplemented by hand sweeping, if determined necessary by the Engineer.

5. Contact surfaces of curbing, gutters, manholes, and other structures shall be painted with a thin, uniform coating of asphaltic cement or approved equal material prior to the mixture being placed against them. Butt joints on previously placed cooled pavement shall be saw cut and tack coated prior to continuing the paving operation.

6. Contractor shall not pave against newly placed concrete curbing until said curbing has cured for a minimum seven (7) days. For the purpose of paving operations only, curb curing time may be reduced to seventy-two (72) hours only upon receipt of Contractor's written certification that Type III Portland High-Early-Strength cement concrete was used in, properly placed, and appropriate curing compounds were applied to the adjacent curb and gutter.

C. Preparation of Paving Asphalt

1. The asphalt shall be heated at the paving plant to a temperature at which it can be properly handled through the pumping system, but at no time shall the temperature of the asphalts exceed that recommended by the asphalt supplier or manufacturer, or be greater than three hundred twenty-five degrees (325º) Fahrenheit or less than two hundred fifty degrees (250º) Fahrenheit.

D. Hand Spreading

1. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the asphalt concrete mixture shall be spread, raked, and luted by hand tools. For such areas, the asphalt concrete mixture shall be placed to the required compacted thickness and density.

E. Compaction

1. Immediately after the asphalt mixture has been spread, struck off and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling.

2. The surface shall be rolled when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving.

3. Initial rolling shall be done with a steel-drum roller with the drive roll operating toward the paver, and/or a suitable pneumatic tired roller. Initial rolling shall be completed while the bituminous mat temperature is above two hundred twenty-five degrees (225º) Fahrenheit.

4. Following the initial rolling at least three coverages of the pavement shall be completed with a pneumatic tired roller, while the mat temperature is above one hundred seventy-five degrees (175º) Fahrenheit.

5. Final rolling shall be completed with a steel–drum roller and shall continue until roller marks and further compression are not evident in the pavement and specified density has been achieved.

6. Unless otherwise directed, rolling shall begin at the sides and proceed longitudinally parallel to the road center line, each trip overlapping one-half the roller width, gradually progressing to the crown of the road. When paving in echelon or abutting a previously placed lane, the longitudinal joint should be rolled first followed by the regular rolling procedure. On superelevated curves the rolling shall begin at the low side and progress to the high side by overlapping of longitudinal trips parallel to the centerline.

7. Any displacement occurring as result of the reversing of the direction of a roller, or from other causes, shall be corrected at once by the use of rakes and addition of fresh mixture when required. Care shall be exercised in rolling not to displace the line and grade of the edges of the asphalt mixture.

8. To prevent adhesion of the mixture to the rollers, the wheels shall be kept properly moistened with water or water mixed with very small quantities of detergent or other approved material. Excess liquid will not be permitted.

9. Along forms, curbs, headers, walls, and other places not accessible to the rollers, the mixture shall be thoroughly compacted with hot hand tampers, smoothing irons, or with mechanical tampers. On depressed areas, a trench roller may be used or cleated compression strips may be used under the roller to transmit compression to the depressed area.

10. Rollers or other vehicles shall not be parked or left standing on pavement that has not cooled sufficiently to prevent indentation by wheels.

11. The Lower Specifications Limit for density is 92.0% of the Maximum Specific Gravity (MSG) as determined by ATM 409.

F. Joints

1. Joints shall be constructed to ensure a continuous bond between old and new sections of the course. All joints shall present the same texture and smoothness as other sections of the course. The Contractor shall offset the longitudinal joints in the top layer from the joint in the layer immediately below by at least four inches (4”).

2. When joining existing pavement and new pavement, the old pavement shall be cut in a neat line with a power-driven saw.

3. Improperly formed joints resulting in surface irregularities shall be removed full depth, replaced with fresh asphalt concrete mixture, and thoroughly compacted. Rolling of joints after the material has cooled below one hundred seventy degrees (170º)

Fahrenheit shall not be allowed. All pavement removal shall be precut to a neat line with a power-driven saw.

4. A tack coat of asphalt cement or asphalt emulsion shall be applied on all cold joints and allowed to break prior to placing fresh asphalt concrete mixture against the joint. This Work shall be completed by Contractor just prior to paving.

5. Transverse joints shall be formed by saw cutting back on the previous run to expose the full depth of the course or by using a removable bulkhead. Transverse joints shall not be perpendicular to centerline, but shall be skewed between fifteen and twenty-five degrees (15º and 25º).

G. Repair and Replacement

1. Asphalt concrete mixture that becomes contaminated with foreign material or is in any way defective as determined by the Engineer shall be removed. Skin patching will not be permitted. Defective materials shall be removed for the full thickness of the course. The pavement shall be cut so that all edges are vertical, the sides are parallel to the direction of traffic, and the ends are skewed between fifteen and twenty-five degrees (15º and 25º). Edges shall be coated with a thin tack coat of material. Fresh asphalt concrete mixture shall be placed in sufficient quantity so that the finished surface will conform to grade and smoothness requirements. The asphalt concrete mixture shall be compacted to the density specified. Any area determined to have an excess or deficiency of asphalt concrete shall be corrected by full depth removal and replacement. No payment shall be made for material replacing defective material. All costs associated with the patching of defective areas shall be borne by Contractor.

H. Vehicular Traffic

1. Contractor shall not allow vehicular traffic on the asphalt mat surface until the mat surface has cooled to below one hundred twenty degrees (120º) Fahrenheit. Any portion of the asphalt concrete mixture that becomes loose and broken, rutted, or damaged in any way due to vehicular traffic on the asphalt mat surface prior to it cooling to below one hundred twenty degrees (120º) Fahrenheit, shall be removed and replaced with fresh hot asphalt concrete, which shall be compacted to conform with the surrounding area at the specified density.

END OF SECTION

SECTION 33 41 00 STORM UTILITY DRAINAGE SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

The work covered by this Section includes the furnishing of all plant, labor, equipment, and materials, and performing all operations in connection with the installation of rain leader lines and onsite stormwater treatment field in accordance with these specifications and applicable Drawings

B. Subsurface Data:

Subsurface investigations have not been performed at the project site and the engineering designs incorporated into the Contract Documents are predicated upon the assumption that suitable non frost susceptible soils will be encountered in the excavation. It is expressly understood that neither Owner's Representative, Engineer, nor Owner will be responsible for interpretations or conclusions drawn regarding subsurface conditions by Contractor.

C. Dewatering:

All work necessary to dewater the excavation or mitigate water flowing from existing building drains as will be necessary to construct items covered in this section.

1.02 QUALITY ASSURANCE

A. Qualification of Workmen:

1. Employ at least one thoroughly qualified supervisor who shall be present at all times during the demolition operations, who shall be thoroughly familiar with the extent of the operations required, the limitations under which they are to be conducted, and who shall direct all the work under this section.

2. In the acceptance or rejection of work of this section, no allowance will be made for lack of skill on the part of the workmen.

3. Employ qualified engineers or surveyors for the establishment of lines and grades.

B. Referenced Standards:

The latest revision of the following standards of the American Society for Testing and Materials (ASTM), The American Association for State Highway Officials (AASHTO), the American Standards Association (ASA), and the American Water Works Association (AWWA) are hereby made a part of these specifications.

ASTM A-48	Standard Specifications for Gray Iron Castings
ASTM D 1248	Polyethylene Plastics Molding and Extrusion Materials, Type III, High Density

ASTM D 3035	Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter
ASTM D 3350	Polyethylene Plastics and Fittings Materials
AASHTO M-105	Gray Iron Castings
AASHTO M-252	Corrugated Polyethylene Pipe 3"-10" diameter
AASHTO M-294	Corrugated Polyethylene Pipe, 12" diameter and larger
AASHTO M-306	Drainage, Sewer, Utility, and Related Castings
Federal Specification SS-S-210	Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints

1.03 SUBMITTALS

A. Submit manufacturer's product data and installation instructions for each product specified for installation as shown on the Drawings, including, but not limited to: piping, insulation, filter fabric, valve boxes, riser pipes, couplings, end caps, tees, cross tees, reducers.

B. Submit gradation test for each source of washed sewer rock.

C. As-Built Drawings

1. The Contractor shall record on one set of Contract Documents all changes from the locations originally indicated and record final locations and appropriate invert elevations for the storm drain line, cleanouts, absorption field, and monitoring tubes, and shall submit an accurate as-built drawing of the completed system to the Engineer.

PART 2 PRODUCTS

2.01 EQUIPMENT

The Contractor shall utilize equipment both suitable for the work intended and appropriate for the weather and conditions encountered.

2.02 MATERIALS

A. Drain Field – Corrugated Polyethylene Pipe (CPEP):

1. Twelve inch (12") and larger diameter pipe shall conform to the requirements of AASHTO M-294. The corrugated Polyethylene Pipe covered by these specifications is classified as follows:

a. Type SP: This pipe shall have a full circular cross-section, with an outer corrugated pipe wall and a smooth inner liner. Corrugations may be either annular or helical. This pipe shall have Class 2 perforations.

2. All CPEP fittings shall be rotational or blow molded and shall conform to the fitting requirements of AASHTO M-294.

3. Contractor shall join CPEP segments per the manufacturer's recommendations. When a bell and spigot joint is utilized, the Contractor shall ensure that the rubber gasket is correctly inserted into the joint and that the bell is on the upstream end of the pipe.

4. For connections not using manufactured couplings, the Contractor shall join twelve inch (12") and larger CPEP with couplings, corrugated to match the index in the pipe corrugations and in a width not less than three-quarters (3/4) of the nominal pipe diameter. All couplings shall be manufactured to lap equally to a distance on each jointed pipe and shall provide a positive means of closure.

B. Rain Leader – Ductile Iron Pipe Class 52 (DIP CL52)

1. Ductile iron pipe is to conform to ASTM A746 (AWWA C151) with a cement mortar lining conforming to AWWA C-104.

2. Iron fittings are to have exterior and interior surfaces coated with fusion bonded epoxy in accordance with AWWA C116/A21.13-09.

3. Nuts and bolts must be carbon steel or stainless steel. carbon steel bolts and nuts must conform to the dimensional and material standards as outlined in AWWA C111 and C115 and be factory-coated with a blue fluoropolymer coating system. Fittings with stainless steel bolts and nuts must conform to the dimensional standards as outlined in AWWA C111 and C115 and the material standards in ASTM F593 and F594 with a minimum tensile strength of 75,000psi. Bolts and nuts must have imprinted markings indicating the material and grade of the metal used in fabrication.

4. Rubber gasket joints for ductile iron pipe fittings are to conform to AWWA C111.

5. Cleanouts are to be restrained at the wye.

6. Minimum Slope for gravity rain leader pipe is 2.00%.

7. Provide and install electric heat trace in rain leader pipes. Coordinate with electrical for point of connection.

C. Insulation

Insulation shall be InsulFoam 40 Expanded Polystyrene (EPS), or approved alternative. Insulation shall be furnished in 2'x8'x2" thick or 4'x8'x2" thick sheets

D. Filter Fabric

Geotextile fabric shall be Typar 3401 or approved alternative. Geotechnical fabric products shall conform to AASHTO M288 Class 3 and have the following characteristics:

1. Minimum Permittivity (ASTM D4491) – 0.5 sec^{-1}

2. Maximum Apparent Opening Size (ASTM D4751) – 0.20 to 0.21 mm (US Sieve #70)

E. Class E Bedding.

Materials furnished by the Contractor for use as "E" bedding classified fill and/or backfill shall be graded within the limitations delineated below:

Class “E” Bedding

U.S. Std. Sieve	Cumulative % Passing by Weight
1/2"	100
3/8”	80-100
#4	20-75
#10	12-60
#40	2-30
#200	0-6

F. Drain Field Rock

Materials Sewer rock for absorption fields shall be screened and washed and shall be substantially free of sand, silt, and other fine-grained materials. Drain field rock must conform to the following gradation.

Coarse Drain Field Rock – Specific Sieve Criteria

U.S. Std. Sieve	Cumulative % Passing by Weight
3"	100
2”	0-100
1-1/2”	0-71
1”	0-30
3/4”	0-10
1/2"	0-5
#200	0-1

PART 3 EXECUTION

A. Trench Excavation and Backfill

This work shall consist of all excavation and backfill required for pipe installation, cleanouts, absorption field, monitoring pipes, and all other related work as specified in this section.

1. Excavation

All excavation shall be unclassified and the Contractor shall do all excavation of whatever substances encountered, including rock and frozen ground, to the depth shown on the plans. Where distinct surface layers are encountered, of topsoil, clay, silt, peat or other materials undesirable for inclusion in the backfill, these materials shall be segregated into separate stockpiles during the excavating.

Lines and grades shall be carried by means of transit and level, or approved equivalent. Whenever there is an indication of a discrepancy in grade, the Owner's Representative shall be consulted and the grade changed or approved before proceeding with work.

a. Clearing and Grubbing:

The Contractor shall clear and grub all brush, trees, debris, trash, garbage, etc. from work areas as is necessary to accomplish the storm drain construction and to prevent such extraneous materials from being utilized in the backfill.

b. Trench Section:

Trench shall conform to OSHA requirements.

c. Utilities:

All water lines, sewers, gas lines, or other utilities encountered in excavation of the trench or appurtenances shall be supported and protected from injury throughout the entire construction period until adequate backfill has been completed.

d. Water Removal:

Ground adjacent to the excavations shall be graded to prevent water from running into the trench. The Contractor shall remove, by pumping or other means, any water accumulated in the excavation which is detrimental to the proposed installation of the sewer lines, appurtenances and structures.

e. Bracing and Shoring:

The Contractor shall, at his own expense, do all bracing, sheathing, shoring and underpinning of the excavation walls and adjacent structures and shall perform such bracing, shoring, etc., for all subsurface utilities and structures and all surface utilities and structures.

f. Unauthorized Excess Excavation:
All excavation below the required grade shall be backfilled with sand or gravel and thoroughly compacted. All unauthorized excess excavation and backfill shall be at the expense of the contractor.

g. Limit of Open Trenches:
The total length of open trench per trenching machine shall not exceed eight hundred (800) feet.

2. Backfill.

After the pipe lines and appurtenances have been properly completed and inspected, the trenches and appurtenant structure shall be backfilled. Backfill from six (6) inches below the pipe to one (1) foot of cover over the top to the pipe shall be of approved selected material grading generally from sand to two (2) inches, and shall contain no large rocks or frozen clods. Any large rocks or frozen clods occurring in the material used for select backfill shall be removed by hand picking, prior to backfilling. Approved selected backfill may be material from the excavation or material selected from the sides of the trenches. Backfill to one (1) foot of cover over the top of the pipe shall be evenly placed and carefully deposited under, around and over the pipe in maximum six (6) inch layers which shall be thoroughly compacted. The remainder of the backfill shall be free of extraneous material such as trees, stumps, trash and large boulders. Backfill shall be placed in lifts and compacted in a manner such that 95% of maximum density is obtained.

a. Utilization of Excavated Material
Usable material removed from trench excavation shall be kept separate from unsuitable material and shall be used where practical for fill and backfill. Excavated materials not required or not suitable for fill and backfill, shall be removed from the site to Contractor furnished disposal site.

b. Replacement of Culverts, Mailboxes, Signs & Markers
All culverts, mailboxes, signs and markers temporarily removed or shored during construction under this contract shall be returned to their original positions. Culverts shall be left free of debris with clear access at each end. Mailboxes, sign, and markers shall be washed or wiped clean of dirt and stains resulting from construction under this contract.

B. Rain Leader Pipe Laying

1. Pipe shall be laid in Class E Bedding or *in situ* material conforming to Class E Bedding unless otherwise required by the Contract

2. Pipe laying shall in all cases proceed upgrade. Each pipe shall be laid true to line and grade and in such a manner as to form a close concentric joint with the adjoining pipe. Each section of pipe shall be handled carefully and placed accurately. Each section of pipe shall be properly supported to ensure true alignment and an invert which is smooth and free from roughness or irregularity. On helical pipe, the laps shall not impede the flow and all seams shall be aligned uniformly for the length of the run. At all times, when Work is not in progress, open ends of pipe and fittings shall be securely and satisfactorily closed so that no undesirable substances shall enter the pipe or fittings. All pipe shall be laid in accordance with the respective manufacturer's recommendations. Pipe shall not be laid when the bottom of the ditch or the sides to one foot (1') above the pipe are frozen. Backfill containing frozen material shall not be placed, nor shall the trench be left open during freezing weather so that the temperature of the material near the pipe goes below freezing.

    a. Pipe Grade and Alignment:
    Wherever work is in progress, the Contractor shall have instruments such as transits, levels, laser devices, and other facilities for transferring grades from offset hubs or for setting of batter boards or other construction guides from the control points and bench marks provided to the contractor by the owner. He also shall have in his employment a man who is qualified to use such instruments and who shall have the duty and responsibility for placing and maintaining such construction guides.

2. Laying Instructions for Pipe:
All other pipe shall be laid in accordance with the respective manufacturer's recommendations. No pipe shall be laid when the bottom of the ditch or the sides to one foot above the pipe is frozen. No backfill containing frozen material shall be placed within three feet of the pipe, nor shall the trench be left open during freezing weather so that temperature of the material near the pipe goes below freezing.

3. Test of Workmanship

    a. General

    The Contractor shall clean all storm drain pipe installed. All sand, debris, mortar and other foreign materials shall be removed from storm drain pipe and manholes prior to testing or final inspection.

C. Drain Field

1. The drain fields shall be constructed to a depth as shown on plans. Prior to placement of any materials, the Contractor shall excavate to the proposed bottom of the leach field. If the water table encountered above the proposed bottom of the leach field, the Owner shall be notified.

2. All CPEP header pipes and laterals shall be level in all parts of the drain field.

3. Once drain rock has been placed, no construction equipment shall be allowed on the absorption field until filter fabric, insulation, and the first lift of backfill material has been placed above the drain rock.

4. Backfill shall consist of non-organic soils, free of roots, sticks, stumps and other debris. Excavated soil meeting the above requirement may be used as backfill material to match existing soil strata. The Contractor is responsible for providing the minimum cover as shown in the plans.

3.03 CLEANING UP

A. General

During the time that the work is in progress, the Contractor shall make every effort to maintain the sites in a neat and orderly condition. All refuse, broken pipe, excess fill material, cribbing, etc. shall be removed as soon as practicable.

Should the cleanup not be maintained in a prudent manner, the Owner may cause the work to stop and payments to be withheld until the "cleanup" portion of the work had been done to the satisfaction of the Owner.

B. Substantial Completion

The work will not be considered complete until all rubbish, unused material or equipment have been removed and the premises left in a condition satisfactory to the Owner.

C. Check of Line & Grade

After backfilling and cleaning, but before final acceptance, all sections of installed line may be checked for line and grade before acceptance. Any excess deviation in line and grade shall be corrected by the Contractor prior to final acceptance of the project.

END OF SECTION