

Project Manual
Including Specifications
for Construction of

Manufacturing & Office Additions to
Ducommun Incorporated

Ducommun Incorporated, 3333 Main Street, Parsons, KS 67357-3632

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Architect's Job Number
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Invitation & Instructions to Bidders ----- 00102

Manufacturing & Office Additions to
Ducommun Incorporated
3333 Main Street, Parsons, KS 67357
Parsons, Kansas

1. Bid Date and Time: Sealed bids for "Manufacturing & Office Additions to Ducommun Incorporated, Parsons, Kansas" will be received by the Owner until 2 PM on Thursday, January 14, 2016 at the offices of Ducommun Incorporated, 3333 Main Street, Parsons, KS 67357

Bidding documents shall not be accepted by fax or e-mail. Bids will be opened publicly and read aloud. The Owner will notify the successful Bidder later. A Bid Tabulation sheet will be sent to each Bidder. The Owner reserves the right to reject any or all bids.

2. General Contractors: This project is open to all interested general contractor bidders. Those firms interested in bidding on the project should contact Amanda Powell, office manager of the Architect, to be listed on the plan holders list as a bidder.

3. Construction Documents (drawings and project manual) will be furnished to the General Contractors in .pdf format. No 'hard copies' will be furnished. General Contractors seeking the construction documents can contact Amanda Powell via email (amanda@hunterandmillard.com) for a dropbox link to access the construction documents.

Due to the size of the set of drawings, the architect's office will not be able to print hard copy sets (or partial sets). The construction documents will be furnished to a number of plan rooms and blueprinting service companies. Those companies that provide printing services will be able to provide construction documents at a lower cost than the Architect's office can provide.

- Tri-State Area Contractor's Association Joplin, MO
- Springfield Blueprint, Springfield, MO
- USA Printing, Joplin, MO
- Builder's Association, Springfield, MO
- Kansas Construction News Report, Wichita, KS
- Southwest Construction News, Tulsa, OK
- McGraw Hill Dodge Plan Room Kansas City, MO
- A & B DigiPlan, Bentonville, Arkansas

4. Bidding:

- **Bid Bond:** Bids shall be accompanied by certified check, cashiers check, or Bid Bond, equal to 5% of the amount of proposal. Checks shall be payable to "Ducommun Incorporated".
- **Withdrawing Bids:** No bids may be withdrawn after the scheduled time for receiving bids for a period of at least 60 consecutive days.
- **Performance and Payment Bond:** will be required for this project.

5. Pre-Bid Conference: A pre-bid conference will be held at the site at 10 a.m. on Thursday January 7, 2016. Attendance for bidding General Contractors is not mandatory but highly encouraged. This conference will be the only opportunity for bidders to see inside the existing

facility. Subcontractor reps may also attend. The owner's representative will be present and there will be a discussion about accessing the site, material storage, contractor parking, etc.

6. Proposal: Proposal Documents: Proposal documents must be enclosed in a sealed envelope bearing the Contractor's name and addressed to the Owner, and further endorsed with the title, " Manufacturing & Office Additions to Ducommun Incorporated, 3333 Main Street, Parsons, KS 67357".

- **Proposal Form:** The name of the Bidder shall be filled in the blank left for this purpose on the Proposal. the place of residence of each Bidder must be given. When a firm is a Bidder, the member of the firm who signs the firm name to the Proposal should state, in addition, the title of the office this member holds with the firm. All prices in the Proposal shall be stated in words and figures. Bids shall state the price of all labor and material required for the complete execution of the work in full conformity with the Plans and Specifications. Additional items of work offered by the Bidder will not be considered without receiving approval from the Architect prior to the Bid Opening.

7. Alternate Bids: Each Bidder shall bid all alternates included (if any) in the Bid Form, except that should he desire not to bid an alternate he may insert the words "no bid" in the space provided for prices for such alternate. However, when a bidder writes "no bid" for one or more alternates he thereby waives any claim to the contract award if that alternate (or those alternates) becomes the basis for determining the low bid and/or the contract award. If an alternate price called involves no change in price, Bidder shall so indicate by writing the words "no change" in the space provided.

8. Familiarity with Conditions: Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Plans and Specifications, Proposal Form, Contract Agreement, visited the site of the work , examined carefully the location, informed themselves by their independent research of the difficulties to be encountered and judged for themselves the accessibility of the work and all attending circumstances affecting the costs of doing the work or the time required for its completion, and obtained all information required to make an intelligent proposal. Bidders shall rely exclusively upon their own estimates, investigations, and other data which are necessary for full information upon which the proposal may be based. It is mutually agreed that submission of a proposal will be evidence that the Bidder has made the examination and investigations required herein.

9. Interpretation of Plans and Specifications: If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the plans, specifications, or other proposed contract documents, he may submit to the Architect a written request for an interpretation thereof. The person submitting such request will be responsible for its prompt delivery. An interpretation of the proposed documents will be made by Addendum duly issued at least four (4) days prior to bid date and a copy of such Addendum will be mailed or delivered to each person receiving a set of such documents. All requests for interpretation must be submitted to the Architect in ample time to be included in the above mentioned Addendum.

No request for interpretation or approval of materials or manufacturers of materials other than those specified will be accepted after this date. The Owner will not be responsible for any explanation or interpretation of the proposed documents. The Architect will be contacted when the Bidder has questions or is in doubt of the true meaning of the work and materials required by the Documents when the work or materials relate to architectural requirements.

10. Bidder's Qualifications: This project is to be bid by qualified Contractors familiar with the type of construction required by this project. The General Contractor may submit with his proposal for approval a list of major Subcontractors proposed for performing work on this project, and after bid opening a full list of subcontractors may be requested by the Owner during the contractor selection phase. The Owner may make such investigations as he deems necessary to determine the ability of the Bidder to perform the Work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein.

11. Time of Completion of Construction: The time of completion of construction of the Project shall be as specified by the Proposal and Contract agreement. The Bidder may not take exception to the time allowed to complete the work. Bids shall reflect the Bidder's price for providing all necessary labor, material, equipment, and supervision to fully complete the work from the date specified in the Notice to Proceed.

12. Contractor Selection Process:

- **The Owner reserves the right to reject any or all bids.** The Owner also reserves the right to waive informalities or minor irregularities in any bid.
- **Selection factors:** factors such as the number of days to complete the project, location of general contractor's offices, use of local subcontractors, etc. may influence the selection of the general contractor.
- **Schedule of Values:** Owner may request a schedule of values indicating their bid by Divisions of Work during the Contractor selection process.
- **References:** Owner may request a list of current projects under construction, a list of completed projects similar to this project, and a list of references.
- **Construction Schedule:** Owner may request a preliminary construction schedule during the Contractor selection process. The successful bidder will be asked to provide a detailed estimated work completion schedule before work commences.
- **Owner has requested up to sixty (60) days to complete the contractor selection and approval process.** The local Ducommun offices will make a recommendation to the corporate offices and this process could take longer than the 'standard' thirty days. The Owner intends to be able to issue a Notice of Award in less than sixty (60) days.

13. Name of Architect's Firm: Please note that the Architect for this project is Hunter and Associates P.C. (a Kansas Corporation). This corporation's offices are located in Joplin, Missouri sharing the offices of Hunter & Millard Architects, Inc. (a Missouri Corporation). Telephone calls to the Architect's office may be answered as Hunter & Millard Architects, Inc.

END OF INSTRUCTIONS TO BIDDERS 00102

Proposal

Date: _____

Time: _____

Proposal of:

(herein called "Bidder")

and

(insert Corporation, Partnership, or Individual, as applicable)

existing under the laws of the State of _____

doing business as _____

to: **Ducommun Incorporated**, 3333 Main Street, Parsons, KS 67357

The Bidder, in compliance with your invitation for bids for the construction of:

Manufacturing & Office Additions to
Ducommun Incorporated
Parsons, Kansas

Having carefully examined the plans, specifications with related documents, the site of the proposed work, and being familiar with the premises and the conditions affecting the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all materials, supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

The prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence Work under this Contract on or before a date to be specified in a written "Notice to Proceed" by the Owner and to fully complete the project within the amount of calendar days as indicated on this Proposal Form.

Bidder acknowledges the receipt of the following **ADDENDA**: _____

BASE PROPOSAL: Bidder agrees to perform all of the work described in the specifications and as shown on the plans for the following prices:

TOTAL BASE BID AMOUNT:

_____ dollars (\$))
(amounts are to be shown in both words and figures. In case of discrepancy, the
amounts shown in words will govern.)

ALTERNATE NO. 1 (changing asphaltic conc. paving to concrete)

If Alternate No. 1 is accepted (add/deduct):

_____ dollars (\$))

ALTERNATE NO. 2 (eliminating metal siding work to existing bldg South wall)

If Alternate No. 2 is accepted (add/deduct):

_____ dollars (\$))

Unit Cost for rock excavation: ____ cubic yard

Unit Cost for unsuitable soil removal: ____ cubic yard.

Calendar days to Substantially Complete the Work: _____

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any irregularities in the bidding.

The Bidder agrees that his bid shall be good and may not be withdrawn for a period of thirty (30) calendar days after the scheduled closing time for receiving bids.

The Bidder agrees, if awarded the Contract, to complete the Project within the number of days which is set forth in this Proposal. The Bidder further agrees to commence construction no later than 10 days from date of receiving Notice to Proceed.

ATTEST Respectfully submitted,

by _____
Name of Company submitting Proposal Authorized Agent Date

(seal) (if bid by a corporation)

Bidder's Address: _____

Notice of Award

to: _____

Project:
Manufacturing & Office Additions to
Ducommun Incorporated,
Parsons, Kansas

Ducommun Incorporated, 3333 Main Street, Parsons, KS 67357

The **OWNER** has considered the **BID** submitted by you for the above described **WORK** in response to its **INSTRUCTIONS TO BIDDERS**.

You are hereby notified that your **BID** has been accepted for items in the amount of:

You are required to return an acknowledged copy of this **NOTICE OF AWARD** to the **OWNER**.

Dated this ____ day of _____, .

By _____
Owner
By _____
Owner

Acceptance of Notice

Receipt of the above **NOTICE OF AWARD** is hereby acknowledged this ____ day of _____, .

By _____

Title _____

Notice to Proceed

Project:
Manufacturing & Office Additions to
Ducommun Incorporated
Parsons, Kansas

Ducommun Incorporated, 3333 Main Street, Parsons, KS 67357

To: _____

Date: _____

You are hereby notified to commence **WORK** in accordance with the **AGREEMENT** dated _____, _____, on or before _____, _____, and you are to complete the **WORK** within _____ consecutive calendar days thereafter.

The **date of completion** of all **WORK** is therefore _____, _____.

By _____, Owner

By _____, Owner

Acceptance of Notice

Receipt of the above **NOTICE TO PROCEED** is hereby acknowledged.

By _____ this the ____ day of _____, _____.

By _____ Title _____

General Conditions ----- 00700

Attached is the General Conditions of the Contract for Construction, AIA Document A201.

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

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

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 Transmission of Data in Digital Form

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Information and Services Required of the Owner

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the

information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

1. allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

- 2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- 3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

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§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications Facilitating Contract Administration

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be

issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

1. assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
2. assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- 1 The change in the Work;
- 2 The amount of the adjustment, if any, in the Contract Sum; and
- 3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in

the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

1. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
2. Unit prices stated in the Contract Documents or subsequently agreed upon;
3. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
4. As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

1. Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
2. Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
3. Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
4. Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
5. Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 - TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 - PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as

may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- 1 defective Work not remedied;
- 2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- 3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- 4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- 5 damage to the Owner or a separate contractor;
- 6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- 7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after

the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution; then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete; provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will

promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of

the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Liability Insurance

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

1. Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
2. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
4. Claims for damages insured by usual personal injury liability coverage;
5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
6. Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
7. Claims for bodily injury or property damage arising out of completed operations; and
8. Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall

be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 Owner's Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 Property Insurance

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 Boiler and Machinery Insurance

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 Loss of Use Insurance

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 Waivers of Subrogation

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 Performance Bond and Payment Bond

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 Correction of Work

§ 12.2.1 Before or After Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 Written Notice

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 Rights and Remedies

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 Tests and Inspections

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

1. Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
2. An act of government, such as a declaration of national emergency that requires all Work to be stopped;
3. Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
4. The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- 1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- 2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- 3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- 4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- 1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- 2 Accept assignment of subcontracts pursuant to Section 5.4; and
- 3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- 1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- 2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- 1 cease operations as directed by the Owner in the notice;
- 2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- 3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 Notice of Claims

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 Continuing Contract Performance

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 Claims for Additional Time

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

1. damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
2. damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from

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the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

Supplementary Conditions ----- 00750

The following supplements modify the "General Conditions of the Contract for Construction," AIA Document A201. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

ARTICLE 2; OWNER

Delete Subparagraph 2.2.5 and substitute the following:

2.2.5 The successful bidder, General Contractor, will not be required to purchase plans and specifications from the Architect. Architect will not be providing paper copies of construction documents.

ARTICLE 9; PAYMENTS AND COMPLETION

9.11 LIQUIDATED DAMAGES

9.11.1 The contractor and the Contractor's Surety, if any, shall be liable for and shall pay the Owner the sums herein stipulated as liquidated damages for each calendar day for delay until the Work is substantially complete:

Three thousand dollars (\$3000.00)

The Contractor shall specify on the Proposal Form the stipulated construction time to be part of this contract agreement in calendar days.

End of Supplementary Conditions

General Requirements ----- 01010

1. **General:** These General Requirements, so far as they may apply, shall be considered as forming part of all divisions of this specification and shall apply to all branches of work and to all contracts.
2. **Definitions:** Terms as used in these contract documents are defined as follows:
 - **Architect:** Where this term is used, it shall refer to Hunter & Associates, P.C. Joplin, Missouri; and shall include their authorized representatives.
 - **Contractor:** The person or entity identified as such in the Owner-Contractor Agreement and is referred to throughout the Contract as if singular in number and masculine in gender. The term Contractor means the Contractor or his authorized representative.
 - **Contract Documents:** The Contract Documents shall include General Conditions, Special Conditions, Regulations of the Contract, Specifications, Architect's Drawings, and all Addenda thereto. The intent of these documents is to include all labor, materials, appliances, and services of every kind necessary for the proper execution of the work, and the terms and conditions of payment therefore. The documents are to be considered as one; whatever is called for by any one of the documents shall be as binding as if called by all. In the event of discrepancies within the Contract Documents, Specifications usually take precedence over drawings (contact Architect for verification), and large scale details shall take precedence over small scale drawings.
 - **Subcontractor:** A person or entity who has a direct contract with the Contractor to perform any of the Work at the site.
3. **Subcontractor subletting:** The holder of any subcontract for construction shall be prohibited from further subletting of that work to others without prior knowledge and approval of the General Contractor and Owner.
4. **Architect's drawings and specifications:** All drawings, specifications, and copies thereof are property of the Owner. They are not to be used on other work and shall be returned on request at the completion of the work. The Architect shall keep the original tracings. As-Built drawings shall be provided by the Contractor to the Owner after job completion.
5. **Shop Drawings, samples, and job measurements:** See Submittals Procedure Section 01330.
6. **Changes in the work:** The Contract Sum and/or the Plans and Specifications may be changed only by Change Order. Changes affecting the Contract Cost shall be considered only upon acceptance in writing by Owner, and Contractor and/or Supplier as authorized by signatures of representatives of each. A Change Order signed by the

General Contractor indicates his agreement therewith, including the adjustment in the Contract Sum.

All changes in the Work shall be authorized by Change Order, and shall be performed under the applicable condition of the Contract Documents.

7. Procedures for change orders: Party requesting the change shall submit a written Change Order request outlining the nature and purpose for the change and any expected adjustment in cost including the adjustments by all affected Contractors or Suppliers. Architect shall review and approve or disapprove the change. If approved, Contractor shall prepare a Change Order stating scope of work and the quoted costs for changes for all affected Contractors and Suppliers and any fee applicable to the change. Change Orders shall be considered a part of Contract Documents only upon authorization of all parties as outlined above.

8. Minor changes: The Architect will have authority to order minor changes in the Work no involving an adjustment in the Contract Sum and not inconsistent with the intent of the Contract Documents.

9. Permits, laws, and ordinances: General Contractor and each subcontractor shall obtain at his expense all necessary permits and fees required in the completion of his work. The Work throughout shall be done in accordance with the laws and ordinances which govern and are in force in the place of locality where the work is done.

10. Insurance, General: The Contractor shall not commence work under this contract until he has obtained all insurance required under this paragraph and such insurance has been approved. The Contractor shall not allow any subcontractor to commence work on this subcontract until all similar insurance required of the subcontractors has been obtained. The minimum insurance coverage's listed below shall in no way limit the Contractor from any other obligations or liabilities.

11. Certificates of Insurance: The Contractor shall furnish Certificates of Insurance to the Owner and the Architect showing that he carries the following insurance:

- Workmen's Compensation: Statutory Limit
- General Liability: \$1,000,000.00 per occurrence, \$2,000,000.00 aggregate

Insurance in said amounts shall be maintained throughout the life of the Contract. The Contractor's insurance shall include coverage against the hazards of explosion, collapse, and underground damage.

Failure to file certificates or acceptance by the Owner of Certificates of Insurance which do not indicate coverage as specified herein, shall in no way relieve the Contractor of his responsibility for maintaining adequate insurance.

Insurance certificates shall be furnished to Owner BEFORE any work by Contractor begins.

12. Subcontractor Liability Insurance: Subcontractors shall maintain such insurance as will protect him from claims under Worker's Compensation acts and other employee benefit acts, from claims for damages because of bodily injury, including death, and from claims for damages to property which may arise both out of and during operations under this contract. Certificates for such insurance must be filed with the Contractor.

13. Owner's Liability Insurance: The Owner shall be responsible for and at his option may maintain such insurance as will protect him from his contingent liability for damages which the subcontractor is required to insure under any provision of this Contract.

14. Builder's risk insurance: The Contractor shall effect and maintain 'Builder's Risk' insurance for this project.

15. Substitution of materials: Certain definite makes of material or equipment are specified as standard. The SubContractor shall bid on the basis for furnishing new makes as specified. He is invited to bid also on any other equal approved makes. The Owner shall have price adjustment information and the right to determine whether or not such substitutions and subsequent price adjustments will be accepted.

16. Manufacturer's directions: All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer unless specified herein to the contrary. Full operating and maintenance manuals to be given to the Owner by the installer.

17. Applications for payment: The Contractor shall be paid for work complete and properly stored materials on a monthly basis. Only ninety percent (90%) of each monthly estimate approved during the construction of the project shall be paid by the Owner to the Contractor prior to completion of construction, and the Certificate of Payment shall be made for this percentage. **Each application for payment shall be made on AIA Document G702 and AIA Document G703.** Additionally, with each application, starting with the second application, the Contractor shall submit a notarized Waiver and Release of Lien, in the form attached hereto, from all manufacturers, materialmen, SubContractors, and others furnishing services and/or material for the Project.

Contractor shall, if required, furnish receipts or other vouchers showing his payments for materials or labor.

Payments shall be made on the basis of ninety percent (90%) of work completed and materials on the job site at time of application.

18. Deductions for uncorrected work: If the Architect and Owner deem it expedient to correct work injured or done not in accordance with the Contract, an equitable deduction from the Contract Price shall be made therefore.

19. Payments withheld: The Architect may withhold, or on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extent as may be necessary to protect the Owner from loss on account of:

- Defective work not remedied.
- Claims filed or reasonable evidence indicating probable filing of claims.
- Failure of SubContractors to make payments properly for material or labor.
- A reasonable doubt that the contract can be completed for the balance then unpaid.
- Damage to another Contractor.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

20. Liens: Neither the final payment for any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the Owner a complete release of all liens arising out of this Contract, or receipts in full lieu thereof. If any lien or claim remain unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such liens or claims, including all costs and reasonable fee for attorney.

21. General guarantee: Each SubContractor shall and hereby does agree and warrant that he shall make good any defects arising from or discovered in his work in the building within one (1) year after completion and acceptance by the Architect whether from shrinkage or defective work, inferior labor and materials.

22. Cleaning up: On completion of the Work, and from time to time when so directed, the Contractor shall clean up and remove from the premises all rubbish arising from the work. Special care shall be taken to avoid cutting, burning, staining, or in any way defacing the floors and walls. Finally, the work and finish materials shall be left cleaned and ready for occupancy by the Owner.

END OF SECTION

Special Conditions ----- 01011

1. Temporary Utilities:

- **Electrical Service:** Electrical SubContractor shall provide adequate electrical service at site for construction needs.
- **Construction Water Piping:** Plumbing SubContractor shall provide construction water piping as required.
- **Temporary Utility Costs:** Contractor shall pay cost of utilities through temporary service only.
- **Temporary Restroom Facilities:** Contractor shall provide temporary restroom facilities, location to be approved by Owner's Representative.

2. **Punchlist:** The Owner will submit a punchlist near the completion of the job.

3. **Construction Documents:** Due to the large number of the construction documents drawings, paper copies will not be furnished to the selected General Contractor. Companies that provide printing services can print large sets more economically than the Architect's Office.

4. Rock Excavation & Unsuitable Soil Removal Clauses:

In the event of unforeseen rock requiring excavation or unsuitable soils needing removed from the site, the unit costs shall be as noted on the Proposal Form. Approval must be given by Architect before commencing.

Unit Cost for rock excavation: ____ cubic yard

Unit Cost for unsuitable soil removal: ____ cubic yard.

END OF SECTION

Alternates ----- 01101

1. Alternate No. 1

In the place provided on the Proposal Form: Contractor shall state price difference for the following:

Replacing asphaltic concrete with concrete as indicated on the civil engineering drawings.

2. Alternate No. 2

In the place provided on the Proposal Form: Contractor shall state price difference for the following: deleting the new metal siding work on the south wall of the existing building as shown on Sht. A1.

END OF SECTION

Submittal Process ----- 01330

1. Submittals / Shop Drawing Procedure: Submittals and Shop Drawings shall be submitted to the Architect in .pdf format.

General Contractor shall review and stamp Submittals / Shop Drawings before submitting to Architect.

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

- A. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that requires sequential activity.
- B. Coordinate transmittal of different types if submittals for related elements of the Work so processing will not be delayed by need to review submittals concurrently for coordination.
- C. Processing: Allow sufficient time for review of submittals, including time for rejection, revision, and resubmittal, so that installation will not be delayed.
 - Allow ten business days for initial review by Architect. Allow 14 business days for initial review by Architect's consultants.
 - Allow additional time for processing submittals that must be coordinated with subsequent submittals.
 - No extension in Contract Time will be authorized due to failure to transmit submittals sufficiently in advance of the Work to permit processing.

2. Submittal / Shop Drawing Preparation: Place a permanent label on each submittal for identification. Include the following information on the label.

- Project name.
- Date.
- Name and address of Architect.
- Name and address of Contractor.
- Name and address of subcontractor or supplier.
- Name of manufacturer.
- Number and title of applicable specification section.
- Drawing number and detail references as applicable.

3. Submittal / Shop Drawing Transmittal:

- Transmit each submittal from the Contractor to the Architect using a transmittal form.
- Apply Contractor's stamp, signed or initialed, certifying that review, verification of

Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the work and Contract Documents.

- Architect will not review submittals that have not been reviewed by the Contractor.
- Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed work.

4. Revisions: Revise and resubmit submittals as required; identify all changes made since previous submittal.

5. Review: Review of submittals will be limited to those submittals required to establish compliance with the specified requirements and necessary for design intent. Other submittals will be returned indicating they are not required for design review.

6. Distribution: Distribute copies of reviewed submittals to affected parties. Instruct affected parties to report any inability to comply with provisions.

6. Maintain one complete set of submittals for Project Record documents.

7. Samples: Submit samples to illustrate functional and aesthetic characteristics of the Product. Submit samples fully fabricated, cured, and finished as specified and physically identical with the material or product proposed.

Submit for review of kind, color, pattern, texture, for final check of these characteristics with other elements, and for comparison of the characteristics between the final submittal and the actual component as delivered and installed. Submit samples of finishes from the full range of manufacturer's standard colors, textures, and patterns for Architect/Engineer's selection.

Where variation in color, pattern, texture or other characteristics is inherent in the material or product represented, submit multiple units that show the approximate limits of the variations.

Colors and Finishes will not be selected from .pdfs. Color Charts/samples to be submitted to Architect. Architect may request full size or larger sample of finishes being considered.

8. Manufacturer's Certificates: When specified in individual specification Sections, submit manufacturer's certifications to Architect/Engineer in quantities specified for Product Data. Indicate if material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

9. Field Samples: Construct field samples, or mock-ups, at the site for review as required by the individual specification sections. Acceptable samples establish a standard of quality for the Work.

END OF SECTION

Part 1 General

1. Section includes:

- A. General Conditions
- B. Supplementary Conditions
- C. Systems Start-up
- D. Demonstration and Instructions
- E. Testing and Adjusting
- F. Final Cleaning
- G. Project Record Documents
- H. Operations and Maintenance Data
- I. Warranties
- J. Contract Closeout

1.2 Systems Start-up

- A. Ensure that each piece of equipment or system is ready for operation.
- B. Execute start-up under supervision of responsible persons in accordance with manufacturers' instructions.
- C. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.3 Demonstration & Instructions

- A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of Substantial Completion. Include instructions by manufacturer's representatives where installers are not expert in the required procedures.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six (6) months.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and shutdown of each item of equipment.
- D. Review maintenance and operations in relation with applicable warranties, agreements to maintain, bonds, and similar continuing commitments. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning, and similar procedures and facilities.
- K. Operation and Maintenance Manuals: Assemble two sets of operation and maintenance manuals. Include emergency instructions, spare parts listing, warranties, wiring diagrams, recommended "turn-around" cycles, inspection procedures, shop drawings, product data, and similar applicable information. Instruction and Maintenance Manuals are required for, but not necessarily limited to, the following:
 - a. Plumbing System
 - b. HVAC System
 - c. Electrical System
- L. Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner.
- M. Make final changeover of locks and transmit keys to Owner, and advise Owner's personnel of changeover in security provisions.

1.4 Testing and Adjusting

- A. Test equipment and systems at full operating conditions and pressures for normal conditions of use. Make adjustments and replacements that are necessary to comply with the Contract Documents and all applicable codes and regulations.

1.5 Final Cleaning

- A. Execute final cleaning prior to Substantial Completion inspection.
 - 1. Special cleaning for specific units of work is specified in sections of Divisions 2 through 16.
 - 2. General cleaning during progress of work is specified in General Conditions and as jobsite administration in "Coordination" section of this Division.
 - 3. Provide final cleaning of the work, at time indicated, consisting of cleaning each surface or unit of work to normal "clean" condition. Comply with manufacturer's instructions for cleaning operations. Clean project in general as indicated below.
- B. Remove labels that are not required as permanent labels.
- C. Clean transparent materials, including mirrors and window/door glass, to a polished condition. Remove substances that obscure vision. Replace broken glass and damaged transparent materials.
- D. Clean exposed exterior and interior hard-surfaced finishes, to a dirt-free condition, free of dust, stains, films, and similar noticeable distracting substances.
 - 1. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces.
 - 2. Restore reflective surfaces to original reflective condition.
- E. Wipe surfaces of mechanical and electrical equipment clean. Remove excess lubrication and other substances.
- F. Remove debris from limited-access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
- G. Clean concrete floors in non-occupied spaces broom clean.
- H. Vacuum clean carpeted surfaces and similar soft surfaces.
- I. Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.
- J. Clean food service equipment to a sanitary condition ready and acceptable for intended food service use.
- K. Clean light fixtures and lamps so as to function with full efficiency. Replace lamps used for temporary lighting.
- L. Clean project site (yard and grounds), including landscape development areas, of litter and foreign substances.
 - 1. Sweep paved areas to a broom-clean condition;
 - 2. Remove stains, petro-chemical spills, and other foreign deposits.
- M. Comply with safety standards and governing regulations for cleaning operations.
 - 1. Do not burn waste materials at site, or bury debris or excess material on Owner's property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from site and dispose of in a lawful manner.

1.6 Project Record Documents

- A. Maintain on site, one set of Contract Documents to be utilized for record documents. Do not use Record Documents for construction purposes. Protect from deterioration and loss.
- B. Record actual revisions to the Work concurrent with construction progress.
- C. Record Drawings and Shop Drawings: Legibly mark each item to record actual installation where the installation varies significantly from work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where shop drawings are used, record a cross-reference at the corresponding location on the Contract Drawing.
 - 1. Mark record sets in red ink. Use other colors to distinguish between variations in the separate categories of work.
 - 2. Mark new information that was not shown on original drawings or shop drawings.
 - 3. Note related Change Order numbers as applicable.
 - 4. Organize record drawings into a manageable set, bind with durable paper cover sheets and print suitable titles and other identification on the cover of each set.
- D. Record Specifications: Maintain one complete copy of the Project Manual including addenda, Change Orders, and other construction documents such as supplemental instructions and clarifications.
 - 1. Mark these documents to show significant variations in the actual Work performed in comparison with the text of the Specifications and modifications.
 - 2. Indicate the selection of substitutions, options, finishes and similar information. Note related record drawing and product data information.
- E. Record Product Data: Maintain one copy of each product data submittal. Mark each to show significant variations in actual work performed in comparison to information submitted.
 - 1. Include variations in products delivered to site and from manufacturer's installation instructions and recommendations.
 - 2. Note related change order items and mark-up of record drawings and specifications.
- F. Submit record documents to Architect prior to date of Substantial Completion.

1.7 Warranties

- A. General Project Warranty: The Contractor hereby does warrant that the work for this building shall be free from defects of labor and materials for a period of one (1) year from the date of final acceptance of same, except when longer periods are herein specified.
- B. Other Warranties:
 - 1. Special Warranty: A written warranty required by or incorporated into the requirements of the technical sections of the specifications, to either extend the time limits provided by standard warranties or to provide greater rights to the Owner.
 - 2. Product Warranties: Preprinted, written warranties provided by individual manufacturers for particular products and specifically endorsed by the manufacturer to the Owner.
- C. Related Damages and Losses: When correcting warranted work, remove and replace other work that has been damaged as a result of failure of the warranted work, or that must be removed and replaced to provide access for correction of warranted work.
- D. Re-instatement of Warranty: When work covered by warranty has failed and been corrected, reinstate the warranty by written endorsement, equal to the original warranty with equitable adjustment for depreciation.
- E. Replacement Cost: The contractor is responsible for the full cost of replacing or rebuilding defective work and related damages.
- F. Submit special warranties, Product warranties, workmanship/maintenance bonds, maintenance agreements, final certifications, and similar documents required by individual specification sections.

G. Submit prior to date of Substantial Completion.

1.8 Contract Closeout

A. Prerequisites to Substantial Completion:

1. Perform work as described in paragraphs above.
2. Obtain and submit releases enabling Owner's full and unrestricted use of the work and access to services and utilities, including occupancy permits, operating certificates, and similar releases.
3. Complete final cleanup, operation and maintenance data, and Warranty requirements as indicated above.
4. Prepare an Application for Payment to coincide with the date of Substantial Completion. Show 100% completion for the portion of Work claimed as substantially complete.
 - a. If 100% completion cannot be shown, include a list of incomplete items accompanied by the value of incomplete construction, an explanation of why work is not complete, and a schedule indicating when incomplete items will be completed.
5. Advise Owner of pending insurance changeover requirements.

B. Substantial Completion: Upon receipt of Contractor's request, the Architect will proceed with inspection or advise Contractor of prerequisite not fulfilled. After initial inspection, Architect will:

1. Prepare a Certificate of Substantial Completion accompanied by an inspection report in the form of a "punch list" of items to be completed or corrected;
2. Or advise Contractor of work which must be performed prior to issuance of certificate; and repeat inspection when requested and assured that work has been substantially completed.

C. Final Acceptance: Prior to requesting Architect's final inspection for certification of final acceptance and final payment, as required by General Conditions, complete the following and list known exceptions in request:

1. Submit final payment request accounting for additional (final) changes to Contract Sum with final releases and supporting documentation not previously submitted and accepted.
 - a. Include certificates of insurance for products and completed operations where required.
2. Submit certified copy of Architect's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Architect.
3. Submit consent of surety.
4. Submit a final liquidated damages settlement statement.

D. Final Inspection: Upon receipt of Contractor's notice that work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect will re-inspect work.

1. Upon completion of re-inspection, Architect will either prepare Certificate of Final Acceptance or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. Procedure will be repeated as necessary.

END OF SECTION

August 10, 2015

Hunter and Millard Architects, Inc.
3323 E. 32nd Street, Suite B
Joplin, MO 64804

RE: Geotechnical Exploration Report
Ducommun Plant Expansion
Parsons, Kansas
Anderson Engineering Work Order # 50055-15

Dear Mr. Millard,

Attached is your soil exploration report performed at the above referenced site for your use.

Should you have any questions regarding the report, please give me or Mark Stanley a call. Thank you for the opportunity to be of service.

Sincerely,

ANDERSON ENGINEERING, INC.
By

Cody R White

Cody R. White, P.E.
Laboratory Manager

GEOTECHNICAL INVESTIGATION REPORT

**Ducommun Plant Expansion
Parsons, Kansas**

**PREPARED FOR
Hunter and Millard Architects
3323 E. 32nd Street, Suite B
Joplin, Missouri 64804**

August 10, 2015

**PREPARED BY:
ANDERSON ENGINEERING, INC.
2045 WEST WOODLAND
SPRINGFIELD, MISSOURI 65807
417-866-2741**

**811 EAST THIRD STREET
JOPLIN, MISSOURI 64801
417-782-7399**

Anderson Engineering Work Order # 50055-15

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INTRODUCTION

This is the report on the results of a geotechnical investigation performed on the site of the **Ducommun Plant Expansion** at 3333 Main Street in Parsons, Kansas.

This investigation was performed for **Hunter and Millard Architects** and authorized by Mr. Jeff Millard on our Work Authorization Agreement Form dated March 31, 2015. The scope of our investigation services was to include drilling six (6) borings within the footprint of the proposed new building area to depths of 15 to 20 feet or auger refusal. The scope also included extending two (2) borings to encounter rock. A 10 feet long core run and or 10 feet long rock bit run with auger resistance would be conducted in each of the two borings that were extended to rock. Soil samples were to be taken at various depths in each of the borings. Lab tests would be performed on the soil samples retrieved from the borings and a report issued giving the findings of this investigation.

The purpose of this investigation was to perform an exploration of the subsurface soil conditions on the site and compile a report giving the findings of the exploration, logs of the borings, and recommendations for site development and foundation design.

To accomplish the intended purpose of the geotechnical investigation, a study was conducted which consisted of (1) on-site borings to describe the subsurface conditions encountered in the borings with sampling of in-place soils; (2) laboratory analysis of the soil samples obtained; and (3) an engineering analysis of the field drilling and laboratory data with engineering report.

PROPOSED CONSTRUCTION

We understand the this project consists of two separate additions to the existing facility. The first is a manufacturing addition located on the north side of the existing plant; between the existing plant and

the existing railroad right-of-way. The second addition is planned to be an office addition located on the east side of the facility. The structures are planned to be a pre-engineered metal building supported on shallow spread foundations and concrete slab on grade. Both additions are planned to be constructed structurally independent of the existing building and will be connected to the existing structure by corridors.

The manufacturing addition is planned to be approximately 50,000 +/- square feet. The structure is planned to be single story and is planned to have 35 foot eave heights on the west end of the building and 20 foot eave heights on the east end of the building. An interior column is planned in each of the seven building bays located at the approximate midpoint of the bay.

The manufacturing addition is anticipated to house numerous pieces and types of equipment. A 30 ton, double bridge crane is planned for this area. The crane is anticipated to be independent from the roof structure. Two large machines are anticipated to be located in the northwest corner of the addition. The machines are anticipated to weigh over 300,000 pounds and will be constructed within a pit in the floor. The pit depth is planned to be about 12 feet deep. Forklift traffic is planned within the manufacturing addition.

The office addition is planned to be approximately 15,000 +/- square feet. The west half of the office addition is planned to be two stories with eave heights ranging from 24 to 26.5 feet. The second story is planned to be unfinished at this time. The east half of the addition is planned to be single story with a low eave height of about 13 feet.

The analysis and recommendations contained in this report are based upon the above mentioned information regarding the proposed structures. If these assumptions are not correct, Anderson Engineering, Inc. should be contacted to review the recommendations in light of the correct structure information.

WORK PERFORMED

ON-SITE BORINGS: Borings conducted during this investigation were generally conducted in accordance with our proposal dated March 31, 2015.

The borings were located in the field by our personnel based on a proposed site sketch provided to us by you. A sketch showing the general locations of the borings was prepared and is included in Appendix I.

Representative soil samples were taken of the different soils and rock encountered in the borings. These soil samples were tested for moisture content, Atterberg limit values, unconfined compressive strength, and or penetrometer strength.

The soil borings drilled in this exploration were drilled using 4 inch diameter, solid-stem, continuous flight augers and a rock bit where hard soils and limestone were encountered. These borings were drilled on July 14, 2015 and August 4, 2015. The drill rig used for all of these borings was a CME 550X ATV drill rig with automatic hammer.

The logs of the borings, drilled in this exploration program, showing descriptions of soil and rock units encountered as well as results of field and laboratory tests are presented in Appendix II.

Soil samples obtained with the CME 550X drill rig were taken using the split spoon sampler. This sampler is used while performing the standard penetration test. This test, described in ASTM D1586, consists of driving a two inch diameter split spoon sampler using a weight of 140 pounds with a free fall of 30 inches. The number of blows to drive the sampler each of three successive 6 inch increments of depth in advance of drilling was recorded and is presented on the boring logs. The sum of the last two blow counts is normally taken as the penetration value expressed in blows per foot. The soil sample obtained from the sampler is considered disturbed, however, it is useful for strata identification, natural

moisture content, Atterberg limit values, hydrometer readings, consolidation testing, and an occasional unconfined compressive strength value.

LABORATORY TESTING: All samples were transported to Anderson Engineering's materials laboratory for further evaluation and testing. Laboratory soil testing included determination of natural soil moisture contents, Atterberg limits, penetrometer strength readings, and/or unconfined compressive strength. Laboratory test results on soil samples recovered from the borings are recorded on the Boring Logs contained in Appendix II of this report.

GEOLOGY OF THE AREA:

A review of the Geologic map for this area shows the site is primarily underlain by soils classified as Pennsylvanian aged Pleasanton Group which primarily consists of gray to dark gray or yellowish gray shale with sandstone and some limestone and coal.

A review of the Labette County Soil Resource Survey for the site reveals that the soils on the site are primarily mapped as the:

8460 - Cherokee silt loam, 0 to 1 percent slopes (mapped over most of site). The parent material of Cherokee silt loam is loess over ancient clayey alluvium. The depth to restrictive feature is more than 80 inches. The reported depth to water table is about 6 to 18 inches. The typical soil profile consists of silt loam (0 to 13 inches), clay (13 to 43 inches) and silty clay at deeper depths. The risk of corrosion to uncoated steel is high. The risk of corrosion to concrete is moderate.

8301 - Verdigris silt loam, 0 to 1 percent slopes, frequently flooded (mapped over extreme northwest corner of manufacturing addition). The parent material of verdigris

silt loam is silty alluvium. The depth to restrictive features is more than 80 inches. The reported depth to water table is more than 80 inches. The typical soil profile consists of silt loam (0-79 inches). The risk of corrosion to uncoated steel and concrete is low.

GENERAL SITE CONDITIONS

The existing Ducommun Aero Structures site is located at 3333 Main Street in Parsons, Kansas. The area is generally surrounded by commercial and some residential development. An existing railroad bed is located north of the proposed site of the addition.

The manufacturing addition is planned to be located north of the existing building. Approximately the middle third of this area is covered with gravel and is currently used for equipment storage and some parking. The northwest and east portions of this area are grass covered and contain a few mature trees. This area naturally drains from northeast to southwest. A past natural drainage way in the northwest corner of the addition has been filled in and replaced with a storm pipe to continue the flow of storm water from the railroad right-of-way. A second swale is located in the east area of this addition. This swale appear to be constructed to provide drainage from roof drains and the area behind the existing building to the railroad right-of-way to the north. This swale was relatively flat and drains poorly, evident by the presence of cattails growing in the swale.

The existing grades near the existing building in the northeast corner of the site are approximately 2 feet higher than that of the existing building. It is suspected this soil was excess from the construction of the existing building and that is was wasted in this area. The areas north and west of the site are currently tree lined, and a few trees still exist within the site. Areas within or near the site may also contain or have previously held buried utilities.

It should be noted that soils located beneath razed buildings and utility lines and/or near existing

buildings and utility lines may be softer than those encountered during this geotechnical investigation. The possible soil waste area to the north of the existing structure is also expected to be placed with little control or compaction as the area was not intended to be structural when the soil was placed. Also, soils encountered in swales can be softer than those found during this investigation.

The office addition is located in the courtyard to the east of the existing building. This area is currently covered by an asphalt parking. Modular structures and storage containers are located in this area. This area is also currently used as die storage. The asphalt in this area was in very good condition with little cracking. This area appears to drain to the east. Some underground utilities are also present in this area.

A review of the Quadrangle Map for the site shows the drainage generally flows around the east and west sides of the site from the north. A swale exists in the northwest corner of the site and slopes from the northwest to the southwest. The swale is mapped as an intermittent stream. The quadrangle map shows a rail spur accessing the building from the main railroad located north of the site. The intermittent stream was mapped as crossing the rail lines. Remnants of the former rail spur and likely drainage structure under the rail spur may both be present and buried. The main railroad and the rail spur are no longer active.

GENERAL SUBSURFACE CONDITIONS:

The subsurface conditions encountered at the boring locations are shown on the boring logs. The stratification lines shown on the boring log represent the approximate boundary lines between the soil layers; in-situ, the transition may be gradual. Characterizations of the soil layers on the boring log were made from observations of the auger cuttings and split spoon samples.

Below is a generalized description of the conditions encountered in the borings. The reader must refer to the boring logs and other attachments included with this report; there is more specific information in the logs and those documents. This information has been simplified to make it easier for the reader to grasp similarities in the borings; it should not be construed that this represents conditions throughout the site as soil conditions were only observed at the locations sampled and the soil conditions will vary from below, not only laterally but vertically from what is below and in the boring logs.

Layer #	Depth	Description	Typical Condition	Typical Remarks
1	0 to 3.0 feet (Up to 6 feet in B1)	Baserock/FILL/DISTURBED Soil	Varies; generally damp and medium firm.	FILL is generally gray with broken brick and/or debris. DISTURBED soil in B2 consists of dark gray silty clay with roots, extends to 4.5 feet
2	3.0 feet to 5 feet	Lean clay	Generally damp or moist and stiff	Generally dark brown or gray with yellow mottles.
4	5 to 15 feet	Shaley Fat Clay	Generally moist and stiff or better.	Generally yellow brown and gray.
5	Top varies from 13.5 to 20 feet, thickness 5 to 6 feet.	Gray Limestone with grayish brown or dark gray shale seams	Limestone is slightly weathered, strong rock, moderately hard. Shale is extremely weathered,	<u>Upper two feet of limestone weathered.</u> RQD for this zone is 45.8 percent in B2, poor rock quality.

			extremely weak rock	
6	22 feet in B1 & 27 feet in B2 to boring termination	Shale, varying shades of gray and black	Generally extremely to moderately weathered, extremely weak to weak rock, low hardness	RQD from 22 to 25 feet in B1 is 37.5 percent, poor rock quality; RQD from 25 to 29 feet in B1 is 63.5 percent, fair rock quality; RQD from 27 to 33.5 feet in B2 is 16.7 percent, very poor rock quality.

Atterberg limits on samples of the minus #40 sieve material of the above soils yielded the following values:

Boring	Depth (feet)	Liquid Limit, LL	Plastic Limit, PL	Plasticity Index, PI	Unified Soil Classification	Plasticity Class
B-6	0.5-2.0	33	18	15	CL	Low
B-4	1.5-3.0	51	17	31	CH	High
B-5	3.0-4.5	52	15	37	CH	High

GROUNDWATER CONDITIONS:

Groundwater was encountered in Boring B2 at 22 feet during drilling. Groundwater was encountered at 4.7 feet and 10.9 feet at approximately 24 hours after drilling in Borings B2 and B6, respectively. We suspect the former swale may be controlling groundwater. Remnant stormwater ditch and/or structure may be allowing groundwater to flow.

It must be remembered that groundwater can be encountered at any depths in residual, disturbed, fill

soils and near existing footing and utility line trenches, especially during wet weather conditions. Groundwater conditions also vary with rainfall, weather conditions, and seasonal changes.

The presence of perched and shallow groundwater can be encountered at any time and depth in these soils, especially, at the contact between soil layers, in cracks and fissures in the soil, in low areas, and at the contact between soil and rock. Rainfall and regional runoff will affect the groundwater conditions and the water table will vary seasonally. Also, the length of time an excavation remains open can affect the quantity of water that will be present in the excavation; it should be noted that our borings were open for a short period of time. As a result, the groundwater conditions encountered during construction may vary from those observed during this investigation.

As mentioned earlier, the County Soil Survey reported the depth to shallow water table in natural soils to be as shallow as 6 to 18 inches in a natural soil profile.

The above is a generalized description of the conditions encountered in the borings. For more specific information, the reader should refer to the boring logs included with this report.

SUMMARY OF SITE AND SUBSURFACE CONDITIONS:

The site and subsurface conditions considered pertinent to the site development and foundation design for the proposed facility are as follows:

- (1) The proposed structures and the planned construction type.
- (2) The geologic conditions of the area. The county Soil Resource Survey shows two soil types in the immediate area of the proposed project: 8301 - Verdigris silt loam (primarily), and 8460 - Cherokee silt loam (nearby to NW).
- (3) The area of the proposed manufacturing addition is north of the existing structure and

covered with base rock or grass. This area naturally drains from northeast to southwest. A past natural drainage way in the northwest corner of the addition has been filled in and replaced with a storm pipe to continue the flow of storm water from the railroad right-of-way. A second swale is located in the east area of this addition. This swale appear to be constructed to provide drainage from roof drains and the area behind the existing building to the railroad right-of-way to the north. This swale was relatively flat and drains poorly, evident by the presence of cattails growing in the swale.

- (4) The existing grades near the existing building in the northeast corner of the site are approximately 2 feet higher than that of the existing building. It is suspected this soil was excess from the construction of the existing building and that is was wasted in this area.
- (5) It should be noted that soils located beneath razed buildings and utility lines and/or near existing buildings and utility lines may be softer than those encountered during this geotechnical investigation. The possible soil waste area to the north of the existing structure is also expected to be placed with little control or compaction as the area was not intended to be structural when the soil was placed. Also, soils encountered in swales can be softer than those found during this investigation.
- (6) The office addition area is covered with asphalt. Modular structures and storage containers are located in this area. This area is also currently used as die storage. The asphalt in this area was in very good condition with little cracking. This area appears to drain to the east. Some underground utilities area also present in this area.
- (7) A review of the Quadrangle Map for the site shows the drainage generally flows around the east and west sides of the site from the north. A swale exists in the northwest corner of the site and slopes from the northwest to the southwest (shown as an intermittent blue line). The quadrangle map shows a rail spur accessing the building from the main railroad located north of the site. The main railroad and the rail spur are no longer active; however, remnants of the rail spur and associated drainage structure

may still be present.

- (8) The baserock/FILL/DISTURBED soil layer, generally to depths of 0 to 3 feet (B-1 had fill to about 6 feet), containing lean clay with broken brick and debris. This soil was generally damp and medium firm. This layer is not suitable for structural support and should be removed. The former intermittent stream (near borings B-1 through B-3) may have soft soils that extended deeper.
- (9) The lean clay, generally dark brown or gray with yellow mottles, from depths of 3 to 5 feet. These soils were generally damp or moist and stiff.
- (10) The yellow brown and gray, shaley fat clay (CH) to typical depths of 5 to 15 feet or to boring termination, generally moist and stiff or better.
- (11) The gray limestone with grayish brown or dark gray shale seams, slightly weathered, strong rock, moderately hard. Shale seams are extremely weathered, extremely weak rock. The depth to the top varied from 13.5 to 20 feet, typical thickness of 5 to 6 feet.
- (12) The gray and black shale to boring termination depths. The shale was generally extremely to moderately weathered, extremely weak to weak rock, low hardness.
- (13) Groundwater was encountered in the borings during drilling in Boring 2 at a depth of 22.0 feet. Groundwater was encountered at 4.7 feet and 10.9 feet at approximately 24 hours after drilling in Borings B2 and B6, respectively. It must be remembered that groundwater can be encountered at any depths in residual, disturbed, fill soils and near existing footing and utility line trenches, especially during wet weather conditions. Groundwater conditions also vary with rainfall, weather conditions, and seasonal changes.

The relationship of these factors to design and construction of the proposed facility is considered in the following sections of this report.

Based on the assumption that the soil and rock conditions found in the borings that were drilled

during this exploration program are representative of the conditions of the entire site, we have prepared the following conclusions and recommendations:

CONCLUSIONS AND RECOMMENDATIONS:

SITE DEVELOPMENT AND EARTHWORK:

1. The presence of old FILL, past and existing swales, and existing utility lines on these sites often leave soils in soft, loose, and wet conditions. Also the demolition of existing building structures, slabs, and utility lines often leave soft, loose or wet soils. Due to these features being present on this site, depths of FILL and unstable soils will vary from those encountered during our investigation. The old FILL, soft soils, and medium firm soils mentioned above will affect the short and long term performance of the planned development. Recommendations for these items and other items affecting the site are described below.
2. All site grading and excavations should be carefully observed for any soft/medium firm and/or unstable soils, old FILL, DISTURBED soils, buried debris or other buried material. In addition, the site should be thoroughly grubbed.
3. All topsoil/surface soil, any DISTURBED soils, any FILL soils, existing slabs, footings or utilities, surface soil with grass and roots, any buried root balls, tree roots, buried topsoil, and loose/soft/medium firm, and/or unstable soils should be stripped and removed from the construction areas down to stiff/medium dense, undisturbed, stable soils (this was typically encountered at 2 to 3 feet depths, see boring logs). Any CH, fat clay soils, if present, that are within 24 inches of the bottom of stone below concrete slabs should be removed.

Based on review of past aerial photos, quadrangle maps and site observations, the depths of FILL or soft or medium firm soils that will likely be encountered is expected to vary across the site and may be deeper than encountered in the borings. Over-excavation of deeper FILL soils should be planned.

Also when excavating the fill and soft/medium firm soils or while placing newly compacted fill, wheeled vehicle traffic should be kept off the excavated natural subgrade. Although the natural subgrade is stiff and will support overlying fill, its strength and soil moisture are generally not sufficient to support wheeled vehicle traffic. Wheeled vehicle traffic, will significantly rut the cut, moist, stiff clay subgrade and create additional earthwork. Only tracked equipment should be allowed on the excavated, natural subgrade. At least 12 inches of compacted fill should be present before wheeled vehicle traffic is allowed over the stiff clay subgrade.

4. Provisions should be made to intercept and carry all surface water around and away from the construction area.

5. The silty clays encountered in the borings contain considerable silt and can become unstable and pump under construction loads depending on their moisture content. If pumping and/or rutting occur during site work, activity should be halted until the affected area can be over-excavated to firm soil or stabilized. Stabilization can normally be accomplished with aeration and re-compaction, the use of ground stabilization fabric, a working mat of clean coarse crushed stone, or admixture incorporation. The need for these measures will depend on the soil, moisture and weather conditions at the time of earthwork and can best be evaluated at that time.

6. Site work required to obtain final subgrade elevations for the proposed facility should be performed using the following criteria:

- a. **After the removal of any unsuitable soils as described in paragraphs 1, 2, and 3 above, any topsoil, existing FILL, any debris, any**

soft/medium firm and unstable soils, the sub grade should be checked for adequate strength.

The checking of adequate strength subgrade could consist of probing, DCP testing, ppq tests, and or other strengths tests may be used to evaluate the subgrade. Also proofrolling with medium ground pressure construction equipment, like wheeled backhoes could be used; or lightly loaded dump trucks could be used to evaluate the cut subgrade. Proofrolling with loaded dump trucks may fail the existing subgrade, causing additional over-excavation and should only be conducted based on the judgment of the geotechnical engineer.

The geotechnical engineer of record should be retained to provide specific recommendations for evaluation.

Should soft, unstable or spongy areas be found in the subgrade at that point, they should be removed and replaced with controlled, compacted fill or shot rock. The geotechnical engineer of record should be retained to provide specific recommendations for repair.

b. After evaluation and approval, the upper 6 inches of exposed sub grade should be scarified, adjusted to within 2% of optimum moisture content (0 to 4 percent above optimum moisture for CH clay sub grades) and compacted to at least 95 percent of maximum dry density as determined by Standard Proctor procedures as outlined in ASTM D698.

c. Compacted fill could consist of a dense graded base (i.e. granular backfill) or inorganic low to moderate plasticity silty clays. The inorganic silty clay soils should have liquid limits less than 50 and a plasticity index of less than 30, except for the upper 2 feet under concrete slabs on grade, foundations, and pavement areas which should have a liquid limit of less than 40 and plasticity index less than 20.

On a case by case basis, soil with 40% or more chert content not meeting the above plasticity requirements can be considered for use as structural fill and approval by the GEOTECHNICAL ENGINEER. (It will require gradation and Atterberg Limits testing as a minimum; swell tests may also be required.)

d. Large size rock greater than six inches inhibits fill compaction

and should be generally excluded from structural fill.

e. Structural fill should be placed in no greater than 8 inch loose lifts and compacted to at least 96.5 percent of maximum dry density as determined by Standard Proctor procedures as outlined in ASTM D698. A testing frequency of at least one field density for each 2500 square feet of fill lift, but no less than 3 tests per lift is recommended within building areas. In pavement areas, the testing frequency may be one field density for each 5000 square feet of fill lift, but no less than 3 tests per lift.

f. Moisture content of the fill material should generally be controlled between 2 percent below and 3 percent above optimum as determined by ASTM D698.

g. Continuous field inspection and field density and moisture content tests should be performed on each lift of the fill to insure compliance with project specifications.

7. Because the surficial soils, without rock, on the site will become spongy" under construction loads, they should be protected from either inundation or drying out. The entire area should be graded to provide adequate slopes and drainage system to ensure movement of water around the site and away from the building and parking areas.

8. The soils at the site are silty in nature and susceptible to erosion. Appropriate erosion control measures, such as site contouring during grading operations and siltation fences, should be used to keep eroded material on the site.

9. All discharge from the guttering system of the proposed building addition and the existing building should not be allowed to soak into grassy areas by the building but should be carried away from the building area for a distance of at least 10 feet. We recommend a grade away from the building area of at least 5 percent for the first 10 feet.

10. Grading, ditches, and drains must be designed into the site plan, especially along any slopes, to

move surface water rapidly around and away from the building area.

11. Fall and spring seasons in this area normally receive considerable rainfall and can present difficult drying conditions when periods of rainy, overcast weather persist. The workability of the silty clay soils found on the site that are suitable for use in fill construction is greatly affected by their moisture content. Every effort should be made to seal fill areas and grade them to drain before rainfall occurs. Areas that become wet will require effort and time to disc and aerate the soils to get them back to a workable condition. Depending on the weather conditions, it may be necessary for these areas to be cut out and replaced with suitable soils or soil and shot-rock combinations.

12. Construction performed during summer months which is typically drier weather will significantly reduce sub grade preparation difficulties and associated costs.

13. Provisions must be made during construction to remove any water entering the excavations.

FOUNDATION DESIGN:

In addition, foundations should be sized and founded to limit the maximum anticipated total or differential movements to magnitudes which can be tolerated by the planned structural system. Construction factors such as the installation of foundation units, excavation and fill placement difficulties and surface and groundwater conditions must also be considered.

SHALLOW FOUNDATIONS FOR STRUCTURES AND LIGHTLY LOADED EQUIPMENT

Based on the findings of this exploration, we recommend that the building foundation systems be founded on stiff, undisturbed residual soil and/or controlled, compacted Fill materials placed per the Site Development section of this report.

1. Footings resting on controlled, properly compacted low volume change (LVC) fill soil (as described in the Site Development section) or stiff, undisturbed residual soil may use a maximum allowable soil bearing pressure of up to 2,000 psf assuming that the site is prepared as recommended in this report.
2. Footing excavations should be examined to verify bearing capacity before the soil is compacted and reinforcing steel is placed. After the footing excavations are completed and inspected by a representative of the geotechnical engineer, the bottom of the footing excavation should be cleaned of all loose soil. After inspection and cleaning, the bottom of the footing excavation should be thoroughly compacted with a mechanical tamper prior to installing reinforcing steel.
3. The recommended bearing pressure listed above, based on following the recommendations made in this report, should provide a minimum factor of safety of approximately 3 against bearing capacity failure.
4. Minimum footing dimensions of 30 inches for spread footings and 18 inches for continuous footings should be used.
5. The footings should be adequately reinforced to allow for uniform distribution of stresses.
6. Exterior footings should be founded a minimum of 30 inches below finished exterior grade to insure being below frost penetration.
7. All footing excavations should be flat or level and well cleaned of all loose, wet soil or rock prior to concreting.
8. Removal of groundwater accumulated in excavations should be required prior to placement of

concrete.

9. Careful inspection of excavations should be performed during construction to detect any unanticipated conditions such as voids, soft zones of soil, debris, utility lines, structures or other conditions that could affect the performance of the proposed structure foundation system. If such conditions are found, the project engineer should be notified before proceeding.

10. The strength and shrink-swell properties of the soil in the footing excavations will change if exposed to weather extremes. Every effort should be made to place concrete the same day as the excavation is completed. If protective measures are not taken on exposed footing excavations, additional excavation of disturbed soil may be required. Highly plastic, expansive clay that is allowed to dry, will often become stronger at that time, but the potential for excessive swell becomes more likely after the footing is placed.

DEEP FOUNDATIONS FOR DEAD END AND PIER STRUCTURES

1. Assuming that the soil and rock found in the borings is representative of the conditions under these structures, we recommend that the deep foundation structures bear on the slightly weathered, gray limestone, strong rock, moderately hard. It should be noted again that groundwater was found as shallow as about 4 feet in Boring B-2. Designers and construction of the pit should account for this.

2. The following parameters may be used in the design of the foundations. For bearing on or into rock, we recommend your structural engineer contact us to discuss.

Soil / Rock Type	Depth, feet	PARAMETER ²⁻¹²						
		Wet Unit Wt, pcf	Allowable End Bearing	Qu	Cu	Allowable Adhesion	Internal Friction Angle, degrees	Passive Pressure Coefficient, Kp
Baselrock/FILL/D ISTURBED Soil	0 to 3.0	115	Neglect ¹	Neglect	Neglect	Neglect	Neglect	Neglect
Stiff, dark brown or gray lean clay (CL)/Clean compacted fill	3.0 to 5.0	120	2000 psf ²	2000 psf	1000 psf	250 psf	20 ⁴	2.04 ⁴
Stiff, yellow brown, shaley fat clay	5.0 to 15.0	115	2000 psf ²	2000 psf	1000 psf	250 psf	20 ⁴	2.04 ⁴
Weathered Limestone	Typically 2 feet shallower than competent rock below	140	-	-	-	500 psf	-	-
Gray Limestone and Gray Shale	Top varies from 13.5 to 20 feet, see logs	150	10,000 psf ²	10,000 psf	5,000 psf	1,700 psf	25 ⁴	2.46 ⁴

Notes –

1. Upper soil. The upper soil should be neglected due to environmental effects and unreliability of lateral support available.
2. Factors of Safety. The allowable design parameters for end bearing capacity and adhesion columns shown above should provide a minimum factor of safety of 3.0. The other design parameters listed above are ultimate values and do not include any factor of safety. The value of a factor of safety depends on the type of application, the degree of uncertainty in the design of the structure and the risk involved. Typical factors of safety for foundations normally range from 2 to 4.

The allowable sliding friction for pullout is based on a minimum pier diameter of 30 inches.

For bearing on soil or rock, the pier must be embedded a minimum depth of 1 pier diameter into this layer for the listed allowable bearing; and the soil or rock layer that is being depended upon should be present for a depth of 2.0 times the width of the proposed foundation.

For adhesion in rock, a minimum pier embedment of 1 pier diameter is required; disregard the first 2 feet of embedment due to disturbance and continuity of rock.

The above pier parameters are based on a minimum center-to-center pier spacing of 4.0 times the pier diameter; if a center-to-center pier spacing of 3.0 times the pier diameter is used, the above allowable design parameters should be reduced to 75 percent of the specified value.

The above friction and parameters are in a drained/low strain state and should not be used or combined with Q_u , C_u , or adhesion parameter. Either drained friction OR Q_u , C_u , and adhesion parameters should be used for a design element. Only extensive triaxial testing can determine friction and cohesion parameters to be used together.

3. Ultimate Friction Coefficient: An ultimate friction coefficient between concrete footings and stiff clay or compacted clay soil it can be assumed to be 0.30; for very stiff to hard clay soil can be assumed to be 0.40; for clayey gravel it can be assumed to be 0.50; for rock it can be assumed to be 0.60.
4. Passive Pressure Coefficient. This passive pressure coefficient can only be used if the cohesive component of passive pressure is not used and drained conditions are used. Internal friction is used only to determine the passive pressure coefficient and should not be used for any other purpose.
5. The structures should be adequately reinforced to allow for uniform distribution of stresses. The piers should be founded a minimum of 30 inches below finished exterior grade to insure being below frost penetration.
6. All piers should also be cased in soil or precautions taken for sloughing soils due to the high amount of chert gravel present. This will cause the soil to cave or slough into an open, vertical excavation. All piers must be cased if anyone enters the pier to inspect or clean the pier. We recommend a 5 foot deep probe hole be drilled at the bottom of piers so that the continuity and condition of the rock can be checked.
7. All anchor excavations should be flat or level and well cleaned of all loose, wet soil or rock prior to concreting.
8. Piers drilled into hard or very dense soil may require drilling with a core barrel.
9. Groundwater should be removed in excavations prior to placement of concrete. If this is not possible, a tremie should be used to insure the concrete is not segregated or weakened by the additional water. By placing the tremie at the bottom of the excavation, maintaining at least 5 feet of head above the end of the tremie pipe and slowly extracting the tremie as placement continues, the

hydrostatic pressure of the fluid concrete should expel the excess water from the excavation as placement progresses.

10. Careful inspection of excavations/piers should be performed during construction to detect any unanticipated conditions such as voids, soft zones of soil or other conditions that could affect the performance of the proposed structure foundation system. The sides and bottom of the weathered rock should be cleaned and examined to ensure that the material is stable and providing the surface area required by the design. If unstable conditions are found, the project engineer should be notified before proceeding. For inspection of piers, a minimum pier diameter of 30 inches is recommended.

11. The strength properties of the soil and weathered rock in pier excavations will change if exposed to weather extremes. Every effort should be made to place concrete the same day as the excavation is completed. If protective measures are not taken on exposed footing excavations, excavation of disturbed soil may be required.

12. Due to the variability of the surface soil elevations and subsurface elevations for soil and/or rock that was encountered, and due to changes expected in soil and/or rock conditions at different locations than tested, the above may be different than actually encountered in construction. As stated earlier, if during construction conditions are found to differ from those discussed or described in this report, Anderson Engineering, Inc. should be advised as once so that these conditions and their impact on construction can be reviewed.

13. Due to the limited number of borings drilled, if structures are located in areas not at the boring locations, we recommend additional borings be done as soil conditions can change significantly in short distance and the design parameters above may not be appropriate.

LATERAL EARTH PRESSURES - BELOW GRADE/RETAINING WALLS

1. Granular backfill. The lateral pressure exerted by the backfill upon any retaining walls or below-grade walls will depend upon the type of backfill and provisions for drainage. To greatly reduce lateral backfill pressure, a drain system should be installed around the perimeter of any below grade walls and retaining structures. The perimeter drain system should consist of either weep drains or a 4-inch PVC or equivalent pipe with 1/4 inch perforations. Drainage should be either to a sump and pump, or by gravity. The pipe should be laid with perforations down and enveloped with an open-graded gravel (ASTM C33, Size No. 57). The open-graded gravel should extend vertically against the back of the below-grade wall, and should then be placed and compacted within a zone defined by a line inclined at minimum of 30 degrees from vertical starting at the bottom of the retaining wall and extending to the ground surface. This retained granular backfill should be surrounded or enveloped with Mirafi 140 filter cloth, or equivalent.

If the wall design includes proper drainage provisions, an equivalent at-rest fluid pressure of 55 pounds per cubic foot may be used in calculating lateral pressures exerted by the granular fill for walls which are restrained at the top or for walls where little movement is desired. For walls which are not restrained at the top (where the wall experiences movement) and where the wall design includes proper drainage provisions, an equivalent active-fluid pressure of 40 pounds per cubic foot may be used in calculating lateral pressures exerted by the granular fill for walls.

Any overlying, surcharge pressures over the granular backfill, for at-rest conditions, should be added to the lateral pressure as 0.46 times the surcharge pressure. Any surcharge pressures over the granular backfill, for active-conditions, should be added to the lateral pressure as 0.33 times the surcharge pressure.

2. Wall Movement. Active-earth pressure is commonly used for design of free-standing cantilever

retaining walls and assumes movement of the wall, at the top of at least 0.002 to 0.004 times the wall height. The "at-rest" or restrained condition assume no wall rotation and should be used for below-grade walls or retaining walls where little movement is desired or expected.

3. Cohesive Backfill. Use of low plasticity, lean clays found on the site is not recommended for wall backfill. However, an equivalent at-rest fluid pressure for low plasticity, lean clay backfill soils against a layer of free draining stone would be 75 pounds per cubic foot. An equivalent active-fluid pressure for low plasticity, lean clay backfill soils against a vertical layer of free draining stone would be 60 pounds per cubic foot. The vertical layer of free draining stone should be a minimum of 2 feet thickness.

Any overlying surcharge pressures over the low plasticity, lean clay backfill, for at-rest conditions, should be added to the lateral pressure as 0.61 times the surcharge pressure. Any surcharge pressures over the lean clay backfill, for active-conditions, should be added to the lateral pressure as 0.49 times the surcharge pressure.

4. Hydrostatic Pressures. In the event that no provisions for drainage are included in the design of the walls, the equivalent fluid pressures noted above should be increased by 63 pounds per cubic foot to resist the additional lateral stresses imposed by possible saturation of the backfill.

5. Soil friction at the footing base may be used to resist sliding. An ultimate friction coefficient of 0.30 between the concrete footing and soil can be used. An ultimate friction coefficient between the concrete footing and base rock can be assumed to be 0.55. Passive resistance should be neglected.

6. The total unit weight above the footing, used to compute the frictional shear resistance, can be assumed to be 120 pcf.

7. The top two feet of the backfill should be compacted clayey soil to minimize the entry of surface

water into the backfill.

8. Overlying structures Behind Retaining Wall. Backfill material behind retaining walls supporting overlying structures should consist of clean, compacted crushed stone meeting the requirements of ASTM C33, Size 57, or equal and placed according to SITE DEVELOPMENT recommendations. The stone should be compacted by consolidation such that no further consolidation is seen after compaction. This should be monitored by us. The stone must be wet and placed in lifts according to the Site Development and Earthwork section recommendations.

9. Compaction Equipment. We recommend that heavy compaction equipment not be allowed to operate within a plane projecting at an angle of 45 degrees from the base of the walls, as this will add to lateral loads onto the wall. Lift thickness will likely have to be smaller than maximum lift thickness in the SITE DEVELOPMENT section to achieve required compaction due to smaller compaction equipment used.

EARTHWORK DURING INCLEMENT WEATHER:

1. If wet conditions are encountered during the construction period, in addition to discing and aerating soils, dry fly ash or dry lime kiln dust such as Calciment could be used to stabilize the soil sub grade beneath the building pad and the parking areas.

2. Stabilization should not take place if the ambient temperature is less than 45 degrees F.

EXCAVATIONS:

1. Excavations into the soil overburden at the site should be able to be performed by conventional

excavation techniques and heavy equipment available in this area although considerable effort and possible drilling and breaking may be required in the layers of hard soil and limestone. We used a rock bit, indicated by "RB" in the drilling method on the Boring Logs or shown by the Rock Bit graphic, to auger through some of these layers. Also when excavating near existing foundations, care must be used not to remove required support for those existing foundations. Shoring or other means of support may be required by the contractor, especially if excavating below existing foundations.

2. All excavation work should be carefully observed for soft, unstable soils and/or debris especially in any deep cut areas.
3. The contractor shall be responsible for designing the excavation slopes and/or temporary shoring and bracing. All trench excavations should meet the requirements specified in federal, state, and/or local safety regulations (e.g. the latest version of OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926). The effects of surcharge loads should also be considered in the design.
4. Soil types A, B and C, as classified by OSHA Standards, are present at the project site.
5. The contractor should perform periodic inspections of all excavations to check for stability. Tension cracking, sloughing of the soils, unusually soft soil zones, or the bulging of soil at the toe of the slope indicate stability problems which should be investigated and corrected immediately. The contractor shall be responsible for the training and safety of all individuals entering trenches and working by excavated slopes.
6. Groundwater was encountered in some borings after during drilling operations. As discussed earlier, the presence and quantity of groundwater often varies with the weather, season of the year, and other factors. Construction de-watering is normally handled in this area at the anticipated depth with ditching to sumps and pumps to pump the water out of the excavations. Structures and/or

excavations below site grades at shallow depth, such as utility vaults, footings, and deeper undercutting should plan for shallow groundwater. Groundwater should also be planned in the proposed equipment pits.

7. Any highly plastic, CH subgrades should be excavated and covered the same day and not be allowed to dry out. Highly plastic soils that are allowed to dry out will shrink and swell considerably. This will affect and may damage overlying structures built over it. If deep excavations become unstable, they will require repair as discussed in the SITE DEVELOPMENT section of this report.

SEISMIC CONDITIONS:

1. For IBC 2012 purposes, this site should be considered a Site Class "D".

CONCRETE FLOOR SLAB SUBGRADE PREPARATION:

1. The concrete floor slab and other concrete slabs should be underlain by a minimum of 6 inches of compacted granular base course material having a maximum aggregate size of 1 ½ inches and no more than 10% passing the #200 sieve. This granular layer should be compacted to at least 95% of maximum dry density and within 2% of optimum moisture content, as determined by a Standard Proctor test, ASTM D 698.

The concrete slab stone subgrade should be smooth and free from irregularities in surface elevations, such as tire rutting, differences in surface elevations from passes of compaction equipment, and or use of open-graded stone without sand infilling or "choking" layer, etc. These surface elevation variations will provide areas for passive resistance to develop in the concrete during curing and restrained shrinkage cracks may occur.

2. Even after preparing the subgrade as detailed in the Site Development section of this report, it has been our experience that the concrete slab subgrades are often disturbed between completion of grading and slab construction due to weather, footing and utility line installation, and other construction activities. For this reason, the subgrade should be evaluated by a geotechnical engineer just prior to installing the reinforcing for the slab. Areas judged by the geotechnical engineer to be unacceptably should be undercut and replaced with compacted crushed stone.

3. Highly plastic soils should not be within 24 inches of the bottom of the floor slab of the proposed structure. Depending on final floor elevations, this may require over-excavation of highly plastic clays. Soils used to bring the area to subgrade should meet the criteria of the Site Development section.

4. Backfill against stem walls inside buildings should be made with a crushed limestone conforming to ASTM C33, Size 57, or equal, to minimize settlement potential. The stone should be wetted and compacted until no further consolidation is observed.

5. A vapor barrier consisting of 10 mil polyethylene on the 6 inches of crushed base rock should be used immediately below the concrete floor slab.

Alternative to a 10 mil polyethylene vapor barrier, the 6 inches of crushed base rock could be replaced with 2 inches of limestone fines or sand over 4 inches of a clean subbase consisting crushed limestone conforming to ASTM C33, Size 57, or equal (total thickness of 6 inches). The limestone fines or sand is used to "choke" off the voids in the 57 stone. The voids of the 57 stone will provide a capillary break for moisture vapor. The clean subbase with limestone fines or sand should only be used if construction traffic, including concrete trucks can be kept off the stone subgrade. These heavy trucks will create ruts and or surface irregularities in the finished alternate stone subgrade causing possible restrained shrinkage cracks to occur during curing.

6. The modulus of subgrade reaction for controlled, compacted fill of these silty clay soils with the above recommended granular base, and site development performed as recommended in this report would be 150 psi/in.

LIMITATIONS:

This report has been prepared for the exclusive use of our client for specific application to the project discussed in accordance with generally accepted soils engineering practice common to the local area. No other warranty, express or implied, is made.

The analyses and recommendations contained in this report are preliminary and are based on the data obtained from the referenced subsurface explorations. The borings indicate subsurface conditions only at the specific locations and time, and only to the depths penetrated. They do not necessarily reflect strata variations that may exist between such locations. The validity of the recommendations is based in part on assumptions about the stratigraphy made by the geotechnical engineer. Such assumptions may be confirmed only during earthwork and foundation construction. If subsurface conditions different from those described are noted during construction, recommendations in this report must be re-evaluated. It is advised that Anderson Engineering, Inc., be retained to observe foundation installation and earthwork construction in order to help confirm that our assumptions and preliminary recommendations are valid or to modify them accordingly. Anderson Engineering, Inc., cannot assume responsibility or liability for the adequacy of recommendations if it does not observe construction.

The scope of this evaluation was limited to an evaluation of the load carrying capacity and stability of the subsoils. Oil, hazardous waste, radioactivity, irritants, pollutants, molds, or other dangerous substances and conditions in the soil, groundwater or surface water within or beyond the site

studied were not the subject of this report. Their presence and/or absence are not implied or suggested by this report, and should not be inferred. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

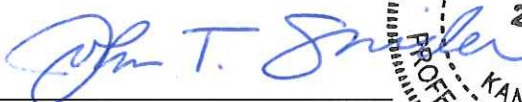
In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by Anderson Engineering, Inc. Anderson Engineering, Inc., is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analyses without the express written authorization of Anderson Engineering, Inc.

Respectfully submitted,

ANDERSON ENGINEERING, INC.
by


Mark Stanley, E.I.
Engineer Intern


Cody R. White, P.E.
Lab Manager


John T. Snider, P.E.
Vice President



APPENDIX I

SOIL BORING LOCATIONS

APPROXIMATE LOCATION SKETCH -

Ducommun Plant Expansion
3333 Main St., Parsons, KS 67357
Anderson Engineering Project #: 50055-15

NOT-TO-SCALE FOR ILLUSTRATIVE PURPOSES ONLY



N

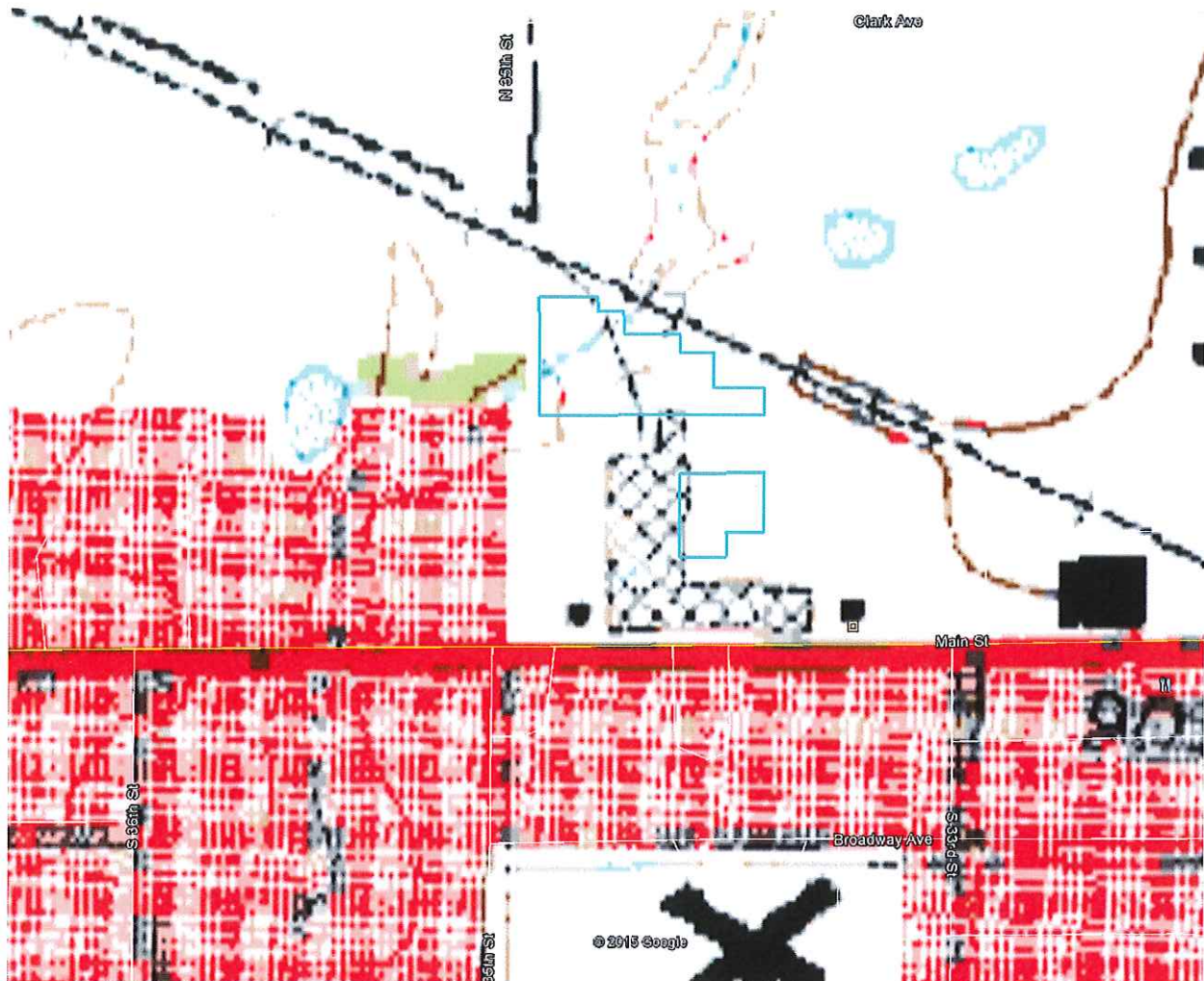
APPROXIMATE QUADRANGLE SKETCH –

Ducommun Plant Expansion

3333 Main St., Parsons, KS 67357

Anderson Engineering Project #: 50055-15

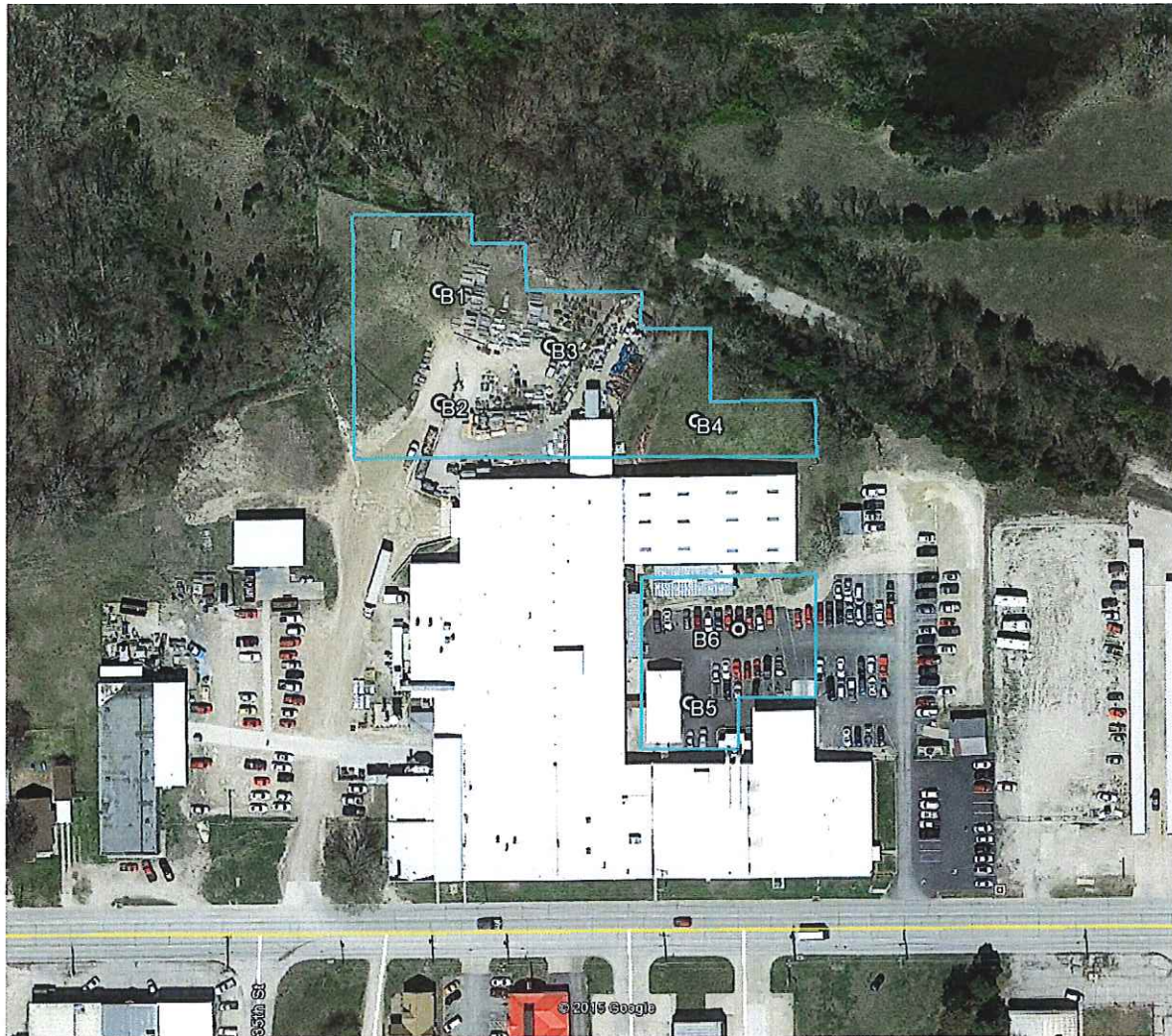
NOT-TO-SCALE FOR ILLUSTRATIVE PURPOSES ONLY



APPROXIMATE BORING LOCATION SKETCH –

Ducommun Plant Expansion
3333 Main St., Parsons, KS 67357
Anderson Engineering Project #: 50055-15

NOT-TO-SCALE FOR ILLUSTRATIVE PURPOSES ONLY



APPENDIX II

LOG LEGEND UNIFIED SOIL CLASSIFICATION SYSTEM BORING LOGS

BORING LOG LEGEND

DRILLING & SAMPLING SYMBOLS

Anderson Engineering Inc
811 E. Third Street
JOPLIN MO 64801
417-782-7399

LITHOLOGIC SYMBOLS (Unified Soil Classification System)

	FILL
	UNSTABLE SOIL
	CL LOW PLASTICITY CLAY
	CH HIGH PLASTICITY CLAY
	ML LOW PLASTICITY SILT
	MH HIGH PLASTICITY SILT
	SW WELL GRADED SAND
	SP POORLY GRADED SAND
	SM SILTY SAND
	SC CLAYEY SAND
	GW WELL GRADED GRAVEL
	GP POORLY GRADED GRAVEL
	GM SILTY GRAVEL
	GC CLAYEY GRAVEL

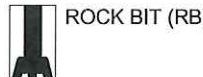
DRILLING



HOLLOW STEM AUGER (HSA)



SOLID STEM / POWER AUGER (SA / PA)



ROCK BIT (RB)



ROCK CORE (RC)

SAMPLING



SPLIT SPOON (SS)



SHELBY TUBE (ST)



AUGER



GRAB/BULK (GS/BS)



ROCK CORE (RC)

WELLS



SAND PACK



W/SLOTTED CASING



CONC. GROUT/FILL



BENT-GROUT/SEAL



CEMENT/BENT GROUT

AUGERS: Hollow Stem (HSA), Solid Stem (SSA), ROCK BIT: RB, HAND AUGER: HA
ROCK CORE: with Diamond Bit (DB), SPLIT SPOON: 2" O.D., SHELBY TUBE: 3" O.D.

___ LBS or ___ PSI next to DRILLING METHOD OR SHELBY TUBE SAMPLER is down pressure to advance or sample at depth shown.

GENERAL NOTES

1. Classifications are based on the United Soil Classification System and ASTM D-2487 and D-2488. They include consistency, moisture, and color. field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

Fine grained soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Coarse grained soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: sand, gravel, cobbles, or boulders. Other descriptions include: color, moisture, consistency for clays and silts, and relative density for granular soils. Geologic description of bedrock if encountered is also shown.

2. Surface elevations and horizontal locations, for borings, test pits, mapped data, GIS information, if provided, should be considered approximate or estimated. They are provided to illustrate the relative location of a sample location to other sample locations. Their accuracy for survey grade location should not be relied upon, unless they have been surveyed and specifically noted.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times. Graphic descriptions are for illustrative purposes only. Authorized users must read the boring log, legend, and report.

N	- BLOWS PER FOOT
LL	- LIQUID LIMIT (%)
PL	- PLASTIC LIMIT (%)
PI	- PLASTIC INDEX (%)
LI	- LIQUIDITY INDEX (%)
W	- MOISTURE CONTENT (%)
DD/WD	- DRY/WET DENSITY (PCF)
NP	- NON PLASTIC
-200	- % PASSING # 200 SIEVE
PP	- POCKET PENETROMETER (TSF)
	">" is greater than; "<" is less than
UC	- UNCONFINED COMPRESSION

ABBREVIATIONS

PID	- PHOTOIONIZATION DETECTOR
ppm	- PARTS PER MILLION

▽	Water Level at Time Drilling, or as Shown	▽	Water Level After Drilling, or as Shown	▽	Water Level After 24 Hours, or as Shown
---	---	---	---	---	---

Water levels indicated on the Boring Logs are the levels measured in the borings at the time indicated. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels is not possible with short term observations.

Key to Soil Symbols and Terms

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS: Sands and Gravels

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS: Silts and Clays

Descriptive Terms	Unconfined Compressive	
	Strength tsf	SPT Blow Count
Very soft	< 0.25	< 2
Soft	0.25 to 0.5	2 to 4
Medium firm	0.5 to 1.0	4 to 8
Stiff	1.0 to 2.0	8 to 15
Very stiff	2.0 to 4.0	15 to 30
Hard	> 4.0	> 30

SPT: Standard Penetration Test: Number of blows of 140 LB hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) Split-spoon sample (SS) the last 12 inches of an 18-inch drive (ASTM-1586).

COMPOSITION:

Sands and Gravels

Descriptive Terms	% FINES by Dry Weight
Trace	0 to 5 %
With	5 to 15%
Clayey, Silty	> 15%

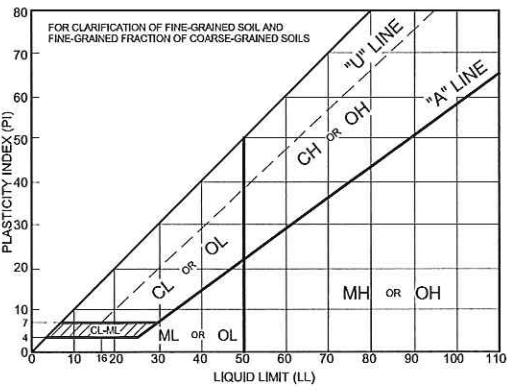
Silts and Clays

Descriptive Terms	% COARSE by Dry Weight
Trace	0 to 15 %
With	15 to 30%
Sandy, Gravelly	> 30%

PLASTICITY

Descriptive Terms	Liquid Limit
Lean	< 50%
Fat	> 50%

Descriptive Terms	Plasticity Index
Non-plastic	0
Very Low	1 to 10%
Low	11 to 20%
Medium	21 to 30%
High	31 to 40%
Very High	> 40%

Major Divisions	Group Symbols	Typical Names	Laboratory Classification Criteria	Particle Size	Material
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for GW	Sieve sizes #10 to #4 #40 to #10 #200 to #40	
		Poorly-graded gravels, gravel-sand mixtures, little or no fines			
	GM*	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	mm	Coarse Medium Fine
		Clayey gravels, gravel-sand-silt mixtures			
	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for SW		Silt Clay
		Poorly-graded sands, gravelly sands, little or no fines			
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	SM*	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	mm	Gravel Fine Coarse Cobble Boulders
		Clayey sands, sand-clay mixtures			
	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity		Sieve	
		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
		Organic silts and organic silty clays of low plasticity			
	MH	Inorganic silts, micaceous or disto-micaceous fine sandy or silty soils, organic silts			
		Inorganic clays of high plasticity, fat clays			
Highly Organic Soils	OH	Organic clays of medium to high plasticity, organic silts			
	Pt	Peat and other highly organic soils			

* Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg Limits: suffix d used when L.L. is 23 or less and the P.I. is 6 or less; the suffix u is used when L.L. is greater than 26.

** Borderline classifications used for soils possessing characteristics of two groups are designated by combinations of group symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

Key to Rock Symbols and Terms

	LIMESTONE		CHERTY LIMESTONE
	DOLOMITE		OOLITIC LIMESTONE
	SHALE		CHERTY DOLOMITE
	SILTSTONE		SANDSTONE
	BROKEN ROCK		CHERT
	WEATHERED ROCK		VOID
	HIGHLY WEATH. ROCK		COAL

ROCK QUALITY DESIGNATION (RQD) Description of Rock Quality

<u>Descriptive Terms</u>	<u>% RQD</u>
Very Poor	0 to 25 %
Poor	25 to 50%
Fair	50 to 75%
Good	75 to 90%
Excellent	90 to 100%

RQD is defined as the total length of sound core pieces 4 inches or greater in length, expressed as a % of the total length cored. RQD provides an indication of the integrity of the rock mass and relative extent of seams and bedding planes.

TERMS DESCRIBING WEATHERING, STRENGTH, OR HARDNESS

WEATHERING:

Descriptive Terms

Recogniton

Extremely Weathered -	Material can be granulated by hand.
Highly Weathered -	More than half of the rock is decomposed; rock is weakened so that a 2 inch diameter sample can be broken readily by hand across rock fabric.
Moderately Weathered -	Rock is discolored, a minimum 2 inch diameter sample cannot be broken readily by hand across rock fabric.
Slightly Weathered -	Rock is slightly discolored, but not noticeably lower in strength than fresh rock.
Fresh -	Rock shows no discoloration, loss of strength, or other affect of weathering.

STRENGTH:

Recogniton

Extremely Weak Rock -	Can be indented by thumb nail. May be broken by hand readily.
Very Weak Rock -	Can be peeled by pocket knife. Crumbles under firm blow with end of a rock hammer. May be broken by hand with difficulty.
Weak Rock -	Can be peeled by with difficulty with pocket knife.
Moderately Strong Rock -	Can be indented 5 mm (0.2 inches) with sharp end of pick.
Strong Rock -	Requires one hammer blow to fracture.
Very Strong Rock -	Requires many hammer blows to fracture.
Extremely Strong Rock -	Can only be chipped with hammer blows.

SCRATCH HARDNESS:

Descriptive Terms

Recogniton

Soft -	Applicable only to plastic materials.
Friable -	Easily crumbled by hand, pulverized, or reduced to powder; to soft to be cut by pocket knife.
Low Hardness -	Can be gouged deeply or carved with a pocket knife.
Moderately Hard -	Can be readily scratched by knife blade; scratch leaves heavy trace of dust and is readily visible after powder has been blown away.
Hard -	Can be scratched with pocket knife only with difficulty; scratch produces little powder; traces of knife steel may be visible.
Very Hard -	Cannot be scratch with pocket knife; knife steel marks are left on surface.

CLIENT Hunter and Millard Architects, Inc. PROJECT NAME Ducommun Plant Expansion
PROJECT NUMBER 50055-15 PROJECT LOCATION Parsons, Kansas
DATE STARTED 7/14/15 COMPLETED 8/4/15 GROUND ELEVATION _____ HOLE SIZE 4 inches
DRILLING CONTRACTOR AE CME 550X GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger 4" AT TIME OF DRILLING ---
LOGGED BY GW CHECKED BY _____ AT END OF DRILLING ---
NOTES ESTIMATED 3-4 FEET HIGHER IN ELEVATION THAN B2- B4 AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH	DRILLING METHOD	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	Unconfined Qu, (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		
											LIQUID LIMIT	PLASTIC LIMIT	PI / LI
0		GRASS COVERED GRAY SILTY LEAN CLAY WITH BROKEN BRICK AND CHERT (10%-30%), DAMP, MEDIUM FIRM	0		SS		3-4-4 (8)	2.5					
1			1		SS		4-4-3 (7)	0.5					
2		SOFT TO MEDIUM FIRM ZONE	2										
3		VERY STIFF AT 4 FEET	3										
4		FILL	4		SS		6-10-8 (18)	2.75					
5			5										
6		DARK BROWN SILTY LEAN CLAY, DAMP, SUSPECTED TO BE STIFF	6										
7			7										
8			8										
9		GRAY AND YELLOW BROWN MOTTLED SHALEY FAT CLAY, MOIST, STIFF TO VERY STIFF	9		SS		5-6-8 (14)	3.5 4					
10			10										
11			11										
12			12										
13		YELLOW BROWN SHALEY FAT CLAY WITH GRAY MOTTLES AND IRON NODULES, MOIST, VERY STIFF	13		SS		4-7-10 (17)						
14			14										
15			15										
16		WEATHERED LIMESTONE	16										
17			17										
18		GRAY LIMESTONE, SLIGHTLY WEATHERED, STRONG ROCK, MODERATELY HARD WITH GRAYISH BROWN SHALE SEAMS, EXTREMELY WEATHERED, EXTREMELY WEAK ROCK, SOME FRACTURES FILLED WITH SOFT SOIL	18		SS		50/2"						
19			19										

(Continued Next Page)

CLIENT Hunter and Millard Architects, Inc.

PROJECT NAME Ducommun Plant Expansion

PROJECT NUMBER 50055-15

PROJECT LOCATION Parsons, Kansas

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth	DRILLING METHOD	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	Unconfined Qu, (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		
											LIQUID LIMIT	PLASTIC LIMIT	PI / LI
20		GRAY LIMESTONE, SLIGHTLY WEATHERED, STRONG ROCK, MODERATELY HARD WITH GRAYISH BROWN SHALE SEAMS, EXTREMELY WEATHERED, EXTREMELY WEAK ROCK, SOME FRACTURES FILLED WITH SOFT SOIL (continued)	20										
21			21										
22		GRAYISH BROWN SHALE LAYERS, HIGHLY WEATHERED, VERY WEAK ROCK, LOW HARDNESS, FRACTURES FILLED WITH SOFT SOIL	22										
23			23										
24		RQD: 19 TO 25 FEET = 37.5% POOR ROCK QUALITY	24		RC	95 (40)							
25		DARK GRAY SHALE, MODERATELY WEATHERED, WEAK ROCK, LOW HARDNESS	25										
26			26										
27		RQD: 25 TO 29 FEET = 63.5% FAIR ROCK QUALITY	27										
28		BLACK SHALE, EXTREMELY WEATHERED, EXTREMELY WEAK ROCK, FRIABLE	28										
29		Bottom of borehole at 29.0 feet.	29										

CLIENT Hunter and Millard Architects, Inc.

PROJECT NAME Ducommun Plant Expansion

PROJECT NUMBER 50055-15

PROJECT LOCATION Parsons, Kansas

DATE STARTED 7/14/15

COMPLETED 8/4/15

GROUND ELEVATION _____

HOLE SIZE 4 inches

DRILLING CONTRACTOR AE CME 550X

GROUND WATER LEVELS:

DRILLING METHOD Solid Stem Auger 4"

▽ AT TIME OF DRILLING 22.00 ft

LOGGED BY GW

CHECKED BY _____

▽ AT END OF DRILLING 22.00 ft

NOTES _____

▽ AFTER DRILLING 4.70 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth DRILLING METHOD	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	Unconfined Qu, (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTIC LIMIT	PI / LI
0		GRASS COVERED GRAY, BROWN, AND YELLOW BROWN LEAN CLAY WITH BROKEN BRICK, DAMP, VERY STIFF	0									
1			1	SS		6-8-13 (21)			16.4			
2		FILL	2	SS		4-4-4 (8)	1 0.25		23.9			
3			3									
4		MEDIUM FIRM	4	SS		2-4-5 (9)	0.5 1.25		24.1			
5		GRAY LEAN CLAY WITH YELLOW MOTTLES, DAMP TO MOIST, STIFF	5									
6		YELLOW BROWN AND GRAY MOTTLED SHALEY FAT CLAY WITH BLACK MOTTLES, DAMP TO MOIST, STIFF	6									
7			7									
8			8									
9			9	SS		2-5-8 (13)	1.5		21.4			
10		YELLOW BROWN FAT CLAY WITH GRAY MOTTLES, MOIST, STIFF	10									
11		STIFFER WITH GRAY SHALE MOTTLES	11									
12			12									
13			13									
14			14	SS		3-5-5 (10)	2		22.8			
15			15									
16			16									
17			17									
18			18									
19		VERY STIFF	19	SS		5-13-24 (37)	+ 4.5		17.6			

(Continued Next Page)

CLIENT Hunter and Millard Architects, Inc.

PROJECT NAME Ducommun Plant Expansion

PROJECT NUMBER 50055-15

PROJECT LOCATION Parsons, Kansas

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth	DRILLING METHOD	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	Unconfined Qu, (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		
											LIQUID LIMIT	PLASTIC LIMIT	PI / LI
20		WEATHERED LIMESTONE WITH SOME GRAY SHALE SEAMS	20										
21			21										
22		LIGHT GRAY SHALEY LIMESTONE, SLIGHTLY WEATHERED, STRONG ROCK, MODERATELY HARD WITH DARK GRAY SHALE, EXTREMELY TO HIGHLY WEATHERED, EXTREMELY WEAK ROCK, SOFT TO FRIABLE	22										
23			23		SS		50/0"						
24			24										
25		RQD: 23.5 TO 27.5 FEET = 45.8% POOR ROCK QUALITY	25		RC	94 (46)							
26			26										
27		DARK GRAY SHALE, MODERATELY WEATHERED, WEAK ROCK, LOW HARDNESS	27										
28			28										
29		RQD: 27.5 TO 33.5 FEET = 16.7% VERY POOR ROCK QUALITY	29					+ 18					
30			30		RC	100 (17)		14					
31			31					17					
32		BLACK SHALE, EXTREMELY WEATHERED, EXTREMELY WEAK ROCK, FRIABLE	32					17					
33			33										

Bottom of borehole at 33.5 feet.

GEOTECH BH AE COL GRAPHIC DRILL - AE CONCRETE GDT - 8/7/15 16:15 - \\UP-FIELD\PROJECT FOLDERS\LAB\GINT\PROJECTS\50055-15 DUCCOMMUN PLANT EXPANSION, PARSONS KS.GPJ

CLIENT Hunter and Millard Architects, Inc.

PROJECT NAME Ducommun Plant Expansion

PROJECT NUMBER 50055-15

PROJECT LOCATION Parsons, Kansas

DATE STARTED 7/14/15 COMPLETED 7/14/15

GROUND ELEVATION _____ HOLE SIZE 4 inches

DRILLING CONTRACTOR AE CME 550X

GROUND WATER LEVELS:

DRILLING METHOD Solid Stem Auger 4"

AT TIME OF DRILLING ---

LOGGED BY GW

CHECKED BY _____

AT END OF DRILLING ---

NOTES _____

AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth DRILLING METHOD	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	Unconfined Qu, (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTIC LIMIT	PI / LI
0		12 INCHES OF GRAVEL, DAMP, LOOSE	0									
1		GRAY AND DARK BROWN LEAN CLAY WITH BROKEN BRICK, DAMP, MEDIUM FIRM TO STIFF	1	SS		12-8-3 (11)						
2			2	SS		4-5-8 (13)	0.25 1					
3		FILL	3									
4		DARK GRAY AND BROWN SILTY LEAN CLAY, MOIST, STIFF	4									
5		GRAY FAT CLAY WITH YELLOW MOTTLES, MOIST, STIFF	5	SS		3-3-4 (7)	2					
6			6									
7		YELLOW BROWN AND GRAY SHALEY FAT CLAY, MOIST, STIFF	7									
8			8									
9			9	SS		3-3-6 (9)	2.75					
10			10									
11			11									
12			12									
13			13									
14		VERY STIFF	14	SS		5-12-50/3"	3.5					
15		LIMESTONE	15									

Bottom of borehole at 15.0 feet.

CLIENT Hunter and Millard Architects, Inc.

PROJECT NAME Ducommun Plant Expansion

PROJECT NUMBER 50055-15

PROJECT LOCATION Parsons, Kansas

DATE STARTED 7/14/15 COMPLETED 7/14/15

GROUND ELEVATION _____ HOLE SIZE 4 inches

DRILLING CONTRACTOR AE CME 550X

GROUND WATER LEVELS:

DRILLING METHOD Solid Stem Auger 4"

AT TIME OF DRILLING ---

LOGGED BY GW

CHECKED BY _____

AT END OF DRILLING ---

NOTES _____

AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth DRILLING METHOD	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	Unconfined Qu, (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTIC LIMIT	PI / LI
0		GRASS COVERED DARK GRAY AND DARK BROWN LEAN TO FAT CLAY WITH BRICKS AND METAL DEBRIS, DAMP, MEDIUM FIRM		SS		2-4-2 (6)			21.5			
2		FILL		SS		2-2-2 (4)	1 0.75 1.25		27.4	51	17	34 0.31
3		GRAY LEAN CLAY WITH YELLOW MOTTLES, DAMP, MEDIUM FIRM, STIFF AT 3 FEET										
4		YELLOW BROWN FAT CLAY WITH GRAY MOTTLES, MOIST, STIFF		SS		2-3-5 (8)	1.25 1.75 1.75	1.98	23.0	52	15	37 0.22
9				SS		3-6-7 (13)	4		18.8			
14		LIMESTONE, 1200 PSI DOWN PRESSURE		SS		50/4"			26.3			

Bottom of borehole at 15.0 feet.

CLIENT Hunter and Millard Architects, Inc. PROJECT NAME Ducommun Plant Expansion
PROJECT NUMBER 50055-15 PROJECT LOCATION Parsons, Kansas
DATE STARTED 7/14/15 COMPLETED 7/14/15 GROUND ELEVATION _____ HOLE SIZE 4 inches
DRILLING CONTRACTOR AE CME 550X GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger 4" AT TIME OF DRILLING ---
LOGGED BY GW CHECKED BY _____ AT END OF DRILLING ---
NOTES _____ AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth DRILLING METHOD	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	Unconfined Qu, (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTIC LIMIT	PI / LI
0		4" ASPHALT	0									
1		BASEROCK, DAMP, MEDIUM DENSE	1	SS		17-17-4 (21)	4.5					
2		DARK GRAY AND BROWN LEAN CLAY, DAMP, STIFF	2	SS		3-4-5 (9)	1.5 2					
3		GRAY LEAN CLAY WITH YELLOW MOTTLES, MOIST, STIFF	3									
4			4	SS		3-4-5 (9)	2					
5			5									
6		YELLOW BROWN SHALEY FAT CLAY WITH GRAY MOTTLES, MOIST, STIFF	6									
7			7									
8			8									
9			9	SS		3-5-6 (11)	3 2.75					
10			10									
11			11									
12			12									
13			13									
14		VERY STIFF	14	SS		5-7-11 (18)	4.5					
15		Bottom of borehole at 15.0 feet.	15									

GEOTECH BH AE COL GRAPHIC DRILL - 8/6/15 12:28 - \\UP-FIELD\PROJECT FOLDERS\LAB\GINT\PROJECTS\50055-15 DUCCOMMON PLANT EXPANSION, PARSONS KS.GPJ

CLIENT Hunter and Millard Architects, Inc.

PROJECT NAME Ducommun Plant Expansion

PROJECT NUMBER 50055-15

PROJECT LOCATION Parsons, Kansas

DATE STARTED 7/14/15

COMPLETED 7/14/15

GROUND ELEVATION _____ HOLE SIZE 4 inches

DRILLING CONTRACTOR AE CME 550X

GROUND WATER LEVELS:

DRILLING METHOD Solid Stem Auger 4"

AT TIME OF DRILLING ---

LOGGED BY GW

CHECKED BY _____

AT END OF DRILLING ---

NOTES _____

▽ AFTER DRILLING 10.90 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth	DRILLING METHOD	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	Unconfined Qu. (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		
											LIQUID LIMIT	PLASTIC LIMIT	PI / LI
0		3" ASPHALT	0										
1		DARK GRAY LEAN CLAY WITH YELLOW MOTTLES AND BROKEN BRICK, VERY SILTY, MOIST, SOFT TO MEDIUM FIRM	1		SS		8-4-3 (7)	0.5		20.7	33	18	15 0.18
2		FILL	2										
3		GRAY LEAN CLAY WITH YELLOW MOTTLES, MOIST, STIFF	3		SS		2-3-5 (8)	1.75		24.1			
4		GRAY FAT CLAY WITH RED MOTTLES, DAMP, STIFF	4		SS		3-5-6 (11)	3.25		22.7			
5			5										
6			6										
7			7										
8			8										
9		YELLOW BROWN SHALEY FAT CLAY WITH GRAY MOTTLES, MOIST, STIFF	9		SS		2-3-7 (10)	3.5		21.3			
10			10										
11			11										
12			12										
13			13										
14		HIGHLY WEATHERED LIMESTONE, MOIST, LOOSE	14		SS		18-50/5"			13.9			
15		LIMESTONE	15										

Bottom of borehole at 15.0 feet.

GEOTECH BH AE COL GRAPHIC DRILL - 8/6/15 12:28 - \\UP-FIELD\PROJECT FOLDERS\LAB\GINT\PROJECTS\50055-15 DUCCOMMUN PLANT EXPANSION. PARSONS KS.GPJ

APPENDIX III

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

Important Information about Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.



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Demolition, Patch & Repair ----- 02050

Part 1 General

1. Related documents: The provisions of the General and Supplementary Conditions and General Requirements apply to the work specified in this section.

Part 3 Execution

1. Surface conditions: Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

2. Demolition: By careful study of the Drawings and Specifications, determine the location and extent of selective demolition to be performed.

3. Verifying: In company with the Architect and Owner, visit the site and verify the extent and location of demolition required. Carefully identify limits of demolition required

4. Prepare and follow an organized plan for demolition and removal of items. Shut off, cap, and otherwise protect existing public utility lines in accordance with the requirements of the public agency or utility having jurisdiction. Completely remove items scheduled to be so demolished and removed, leaving surfaces clean, solid, and ready to receive new materials specified elsewhere. In all activities, comply with pertinent regulations of governmental agencies having jurisdiction.

5. Demolished materials shall be considered property of the Contractor unless otherwise noted on the Drawings or agreed upon with the Owner and shall be completely removed from the site.

6. Dust: Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

7. Replacements: In the event of demolition of items not so scheduled to be demolished, promptly replace such items to the approval of the Architect and at no additional cost to the Owner.

End of Section

Structure Excavation, Trenching, Backfilling & Grading ----- 02220

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 3. Work Included:** In general, this includes, but is not limited to excavation, trenching, filling, compacting, and satisfactory disposal of all materials required to prepare a complete construction site for the miscellaneous structures, and all other uses in accordance with these specifications and in conformity with the dimensions as shown on the drawings and with elevations and contours established by the Architect.
- 4. Site Clearing Work** Includes, but is not limited to:
 - Protection of existing trees.
 - Removal of trees and other vegetation.
 - Topsoil stripping.
 - Clearing and grubbing.
 - Removing above-grade improvements.
 - Removing below-grade improvements
- 5. Protect improvements** on adjoining properties and on Owner's Property. Restore damaged improvements to their original condition, as acceptable to parties having jurisdiction. Protect existing trees and vegetation indicated to remain in place, against unnecessary cutting, breaking, skinning of roots, etc. Provide temporary guards to protect trees and vegetation to be left standing.
- 6. Coordination with Civil Engineering Drawings and Specifications:** Contact Architect if a conflict arises between this Specification section and the structural or civil engineer's drawings and specifications for clarification.
- 7. Rock Excavation & Unsuitable Soil Removal Clauses:**

In the event of unforeseen rock requiring excavation or unsuitable soils needing removed from the site, the unit costs shall be as noted on the Proposal Form. Approval must be given by Architect before commencing.

Unit Cost for rock excavation: ____ cubic yard

Unit Cost for unsuitable soil removal: ____ cubic yard.

Part 3 Execution

- 1. Common Excavation:** The Contractor shall excavate to the lines, grades, and elevations shown on the drawings all materials within the work area, and place and/or dispose of the

excavated materials specified herein, as called for on the drawings or as directed by the Architect.

2. Foundations: All footings shall be founded on firm undisturbed soil or approved compacted fill material.

3. Slabs on grade: Where the drawings show compacted granular backfill under other slabs on grade, the excavation shall be carried deep enough to permit the minimum thickness of compacted granular material to be placed.

4. Over-Excavation: In no case shall any footings be found above those elevations shown on the drawings. If soft or unsuitable soil is encountered at elevations where footings are to be founded, the excavation shall be taken through unsuitable material and brought back up to grade with approved compacted fill material. Contractor shall notify the Architect when such conditions are encountered.

5. Excavation Bottom: Special care shall be taken to prevent disturbance of the bottom of excavations where the soil is to provide bearing for slabs, footings, etc. If surface water or other conditions which may decrease the bearing capacity of the foundation subgrade are present, then soil adequate to protect the foundation subgrade shall not be excavated until just before reinforcing steel and concrete are to be placed. The bottom of all excavations shall be inspected and approved by the Architect before placement of any granular materials, reinforcing steel, or concrete.

6. Removal of Water: The Contractor shall, at all times during the construction of the work, provide and maintain ample equipment to remove and dispose of all water entering the excavations of other parts of the work and keep said excavations dry until the structures to be built therein are completed. No reinforcing steel shall be placed in water, and no water shall be allowed to rinse over any reinforcing steel before the concrete has been placed. No water shall be allowed to come in contact with any concrete within 24 hours after placing unless specifically required by the drawings, authorized by the Architect, or specified herein. The Contractor shall be held responsible for the conditions of any sewers, drains, or other conduits or pipelines which may be used for drainage purposes and such pipes or conduits shall be clean and free from all sediment before acceptance by the Architect.

7. Sheet piling, Shoring or Bracing: Sheet piling, shoring or bracing shall be placed by the contractor wherever necessary for the proper preservation of any excavation, embankment, or structure. Where the ground is of such a character, or other conditions are such as to render it necessary, the sheet piling shall be closely driven and shall be to such depth below the lowest point of the final excavation as may be directed. The Contractor shall be held responsible for the sufficiency of all sheet piling and bracing used, and for any and all persons injured or property damaged as the result of improper quality, strength, placement, maintenance, or removal of the same. No extra compensation shall be made for sheet piling, shoring, or bracing, whether left in place or not. The Contractor, at his own expense, shall shore up, protect, and insure from injury all building, retaining walls, piers, and footings, storm sewers, sanitary sewers, gas lines, water lines, fences, curbs, trees, or other property liable to be injured during the process of the Work, and he will be held responsible for all damage which may occur by reason of prosecution of the

Work. Sheeting, shoring, and bracing shall be provided, installed, and maintained to protect the excavation, and insure the safety of workmen, and shall be as required by applicable Federal, state, and local laws, rules, and regulations.

8. Groundwater: When groundwater is found which, in the opinion of the Architect, affects the safety, usefulness or satisfactory operation of any of the permanent work, he may direct special provision to be taken. Such work shall be performed and extra compensation shall be as previously established by written Change Order. Extra compensation shall not be made for removal of water required for normal construction.

9. Backfill and Compaction: All designated areas, including parking areas, driveways, and areas to receive new work, shall have a subgrade which has been scarified to a depth of 6 inches, broken up, adjusted to a moisture content and compacted to 95% of maximum dry density as determined by the standard proctor moisture-density relationship test.

Prior to placing fill material, all soft material shall be removed to a depth necessary to establish good bearing of the fill material. The surface of the ground shall be scarified to a depth of 6 inches and recompacted to 95% maximum density.

When the drawings require placement of fill beneath a proposed structure, the floor or footing subgrade shall be made with 8 inch loose lifts with each lift compacted to a minimum of 95% of maximum dry density as determined by the Standard Proctor Moisture-Density Relationship Test (ASTM D 698). Each lift should be tested by a recognized testing laboratory for compaction prior to the placement of successive lifts. At least three tests per lift should be obtained, with three (3) copies of the tests sent to the Architect. If insufficient compaction is indicated by testing, the lift should be reworked and retested prior to the placement of additional fill lifts. Contractor is responsible for cost of tests.

10. Topsoil: After rough grading is completed and approved, scarify subsoil areas to be lawns to a depth of 6" and place layer of topsoil thereover, using topsoil required (minimum of 4"). Topsoil material shall be fertile, natural loam topsoil, free from stones, debris, clay, and weeds.

11. Finish Grading: Cut, fill, and grade to extent of contours and elevations indicated on drawings; all areas free-draining. Make minor grade adjustments as may be directed by Architect, without added cost. All finished grading shall be hand raked.

End of Section

Landscaping ----- 02900

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for landscaping where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Grass seed:** Grass seed shall be mixed and certified by the dealer and shall be 60% Kentucky 31 fescue, 10% Korean Lespedeza, and 30% Perennial Rye by weight, and shall be uniformly sown.
- 2. Fertilizer:** Commercial fertilizer shall be a formula 12-12-12, and shall conform to the applicable state fertilizer laws.
- 3. Mulch:** Straw
- 4. All landscaping features** (other than grass seed, fertilizer, and mulch for grass) such as trees, plants, trees, shall be by Owner if required.

Part 3 Execution

- 1. Seeding:** Seed shall be placed at a minimum of 1 lb. per 200 square feet of area. Place straw mulch over seed. Water as per seed supplier recommendations. Apply fertilizer per seed and fertilizer manufacturers' recommendations.
- 2. Location:** any disturbed areas (not asphalt or concrete – noted as grass or not) or new areas noted as 'yard', 'grass', or 'lawn' on civil engineering drawings to have seed and straw.

END OF SECTION

Cast-in-Place Concrete & Reinforcement ----- 03000

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for concrete and reinforcement work where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop drawings and product data:** Submit in accordance with Section 01330 'Submittal Procedure'. Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by Architect.

Shop drawings - reinforcement: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement required and openings through concrete structures.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Codes and standards:** Comply with provisions of the following codes, specifications and standards, except where more stringent requirements are shown or specified.
 - ACI 301 "Specifications for Structural Concrete for Buildings".
 - ACI 318 "Building Code Requirements for Reinforced Concrete".
 - Concrete Reinforcing Steel Institute, "Manual of Standard Practice".
- 6. Concrete testing service:** Engage a testing laboratory acceptable to Architect to perform material evaluation tests and to design concrete mixes. Materials and installed work may require testing and retesting, as directed by Architect, at anytime during progress of work. Allow free access to material stockpiles and facilities. Tests, including retesting of rejected materials and installed work, shall be done at Contractor's expense.
- 7. Laboratory test reports:** Submit laboratory test reports for concrete materials and mix design test as specified.

Part 2 Products

- 1. Forms for exposed finish concrete:** Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form

material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection. Use plywood complying the U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

2. Forms for unexposed finish concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

3. Forms for unexposed unfinished concrete: Forms for concrete surfaces which will be placed directly against the neat excavation only when requested by the Contractor and approved in writing by the Architect. When omission of the forms is accepted, provide additional concrete at no additional cost required beyond the minimum design profiles and dimensions of the footing and grade beams as detailed.

4. Form coatings: Provide commercial formulation form coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

5. Reinforcing bars: ASTM A 615, Grade 60, deformed.

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

7. Welded wire fabric: ASTM A 185, welded steel wire fabric

8. Supports for reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications, unless otherwise acceptable. For slabs-on-grade: use supports with sand plates or horizontal runners where base material will not support chair legs. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class 1) or stainless steel protected (CRSI, Class 2).

9. Concrete materials

- A. **portland cement:** conform to the Standard Specification of the ASTM, C150, type 1, latest edition. Cement produced by the same mill shall be used throughout the project.
- B. **fly ash:** ASTM C 618, Type C or Type F. Limit use of fly ash to not exceed 25% of cement content by weight.
- C. **normal weight aggregates:** ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete. For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.
- D. **lightweight aggregates:** ASTM C 330.
- E. **water:** Drinkable

10. Air-entraining admixture: ASTM C 260. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

- "Air-Tite", Gifford-Hill
- "Sika Aer", Sika Chemical Corp.

- “Euco Air Mix”, Euclid Chemical Co.

11. Water-reducing admixture: ASTM C 494, Type A, and contain not more than 0.1% chloride ions. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

- “Eucon WR-75”; Euclid Chemical Co.
- “Plastocrete 160”; Sika Chemical Corp.
- “PSI-400”, Gifford-Hill.

12. High-range water-reducing admixture (super plasticizer): ASTM C 494, Type F or Type G and contain not more than 0.1% chloride ions. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

- “Sikament”; Sika Chemical Corp.
- “Eucon 37”; Euclid Chemical Co.
- “PSI Super”; Gifford-Hill

13. Water-reducing, non-chloride accelerator admixture: ASTM C 494, Type E, and containing not more than 0.1% chloride ions. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

- “Accelguard 80”; Euclid Chemical Corp.
- “Gilco Accelerator”; Gifford-Hill
- “161FL” Sika Chemical Corp.

14. Water-reducing, retarding admixture: ASTM C 494, Type D, and contain not more than 0.1% chloride ions. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

- “Edoco 20006”; Edoco Technical Products
- “Eucon Retarder 75”; Euclid Chemical Co.
- “Plasticment”, Sika Chemical Corp.

15. Certification: Provide admixture manufacturer's written certification that chloride ion content complies with specified requirements. Calcium chloride or admixtures containing more than 0.1% chloride ions are not permitted.

16. Moisture barrier: Provide moisture barrier cover over prepared base material where indicated. Polyethylene sheet not less than 10 mils. thick; ASTM E 1745 Compliant.

17. Non-shrink grout: CRD-C 621, factory pre-mixed grout. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

- “Embeco 153”; Master Builders
- “Firmix”; Euclid Chemical Co.
- “Kemox G”; Sika Chemical Co.

non-metallic:

- “Masterflow 713”; Master Builders
- “Euco-NS”; Euclid Chemical Co.
- “Sika 212”; Sika Chemical Co.

18. Liquid membrane forming sealing compound: Liquid type membrane-forming sealing compound complying with ASTM C 309, Type I, Class A unless other type acceptable to Architect. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

- “Ecocure”; Euclid Chemical Co.
- “Kure-N-Seal”; Sonneborn-Contech
- “Hardtop”; Gifford-Hill

19. Bonding compound: Polyvinyl acetate or acrylic base, rewettable type. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

“Euroweld”; Euclid Chemical Co.

“Sonocrete”; Sonneborn-Contech

“Hornweld”; A.C. Horn

20. Epoxy adhesive: ASTM C 881, two component material suitable for use on dry or damp surfaces. Provide material ‘type’, ‘grade’, and ‘class’ to suit project requirements. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

“Epoxite”; A.C. Horn

“Sidadur Hi-Mod”; Sika Chemical Corp.

“Euco Epoxy 463 or 615”; Euclid Chemical Corp.

21. Proportioning & design of mixes

Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301.

22. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect.

23. Design mixes to provide normal weight concrete as indicated on drawings and schedules.

24. Adjustments to concrete mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

25. Admixtures: Use water-reducing admixture or high range water reducing admixture (super plasticizer) in concrete as required for placement and workability. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees F. Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture manufacturer’s prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1 1/2% within following limits: Concrete structures and slabs exposed to freezing and thawing, de-icer chemicals, or subjected to hydraulic pressure: 4.5% (moderate exposure) 6.0% (severe exposure) 1” maximum aggregate. Other concrete: 2% to 4% air. Use admixtures for water-reducing and set-control in strict compliance with manufacturer’s directions.

26. Water-cement ratio: Provide concrete for following conditions with maximum water-cement (WC) ratios as follows: Subjected to freezing and thawing: WC 0.50.

27. Slump limits: Ramps, slabs, and sloping surfaces: not less than 2" and not more than 4". Reinforced foundation systems: not less than 4" and not more than 6". Other concrete: not more than 4".

28. Concrete mixes: Ready-Mix concrete shall comply with requirements of ASTM C 94, and as herein specified.

C. Execution

1. Mixing: Concrete shall be mixed in a truck mixer until there is a uniform distribution of materials. The entire contents of the drum shall be discharged before recharging. The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity of the mixer. The mixer shall be operated at not greater than twenty (20) r.p.m. Mixing shall continue for at least one and one-half (1 1/2) minutes after all the ingredients are in the mixer.

Ready-mixed concrete conforming to the above requirements may be used with the written approval of the Architect. Concrete transferred in a truck mixer, agitator, or other transportation device, shall be discharged at the job and placed in its final position in the forms within one and one-half (1 1/2) hours after the introduction of the mixing water to the cement and aggregate, except that in hot weather or under other conditions contributing to quick stiffening of the concrete, the maximum allowable time may be reduced by the Architect. The delivery ticket for each load of concrete shall state the proportions of each material in the mix for that load.

Re-tempering of concrete which has partially hardened, that is, remixing with or without additional aggregate, cement, or water, will not be permitted.

2. Reinforcement: Reinforcement steel shall be manufactured from new billet steel of 60,000 psi yield strength and shall conform to ASTM A-15 with deformations conforming to ASTM A-305. Wire mesh fabric shall conform to ATM A-185.

Reinforcing bars shall be accurately placed and securely tied with No. 18 iron wire at all intersections. Bars and mesh shall be supported above subgrade on precast concrete blocks and above forms on steel chairs and spacers. Metal hangers shall be used for support of vertical reinforcing. Metal chairs, which are in contact with the exterior surface of the concrete, shall be galvanized. Layers of bars shall be separated by precast concrete blocks. The use of pebbles, pieces of broken stone or brick, metal pipe and wood blocks for support of bars shall not be permitted. Splicing of reinforcing bars shall be done by overlapping the bars a minimum distance of 48 times the diameter of the bar and securely tied with no. 18 wire. Corner bars shall extend 48 times the diameter from corner in each direction.

In slabs on grade, position welded wire fabric 2" below top of slab. During concrete pouring operations, care shall be taken to keep fabric properly positioned. Reinforce such slabs with 6x6, w1.4-w1.4 wire mesh fabric where not otherwise indicated on the Drawings. All reinforcement shall be unpainted, uncoated, clean and free of rust or scale before being placed.

3. Placement of reinforcing shall be approved by the Architect before concrete is placed.

4. Forms: Forms shall be true and rigid and built to the line, shape, and grade shown on the plans. They shall be made of sound and reasonably smooth lumber, plywood, or steel. Joints shall be mortar tight and forms shall be tied and braced to prevent any bulging or deflection during concrete work. Before reusing forms, or when using secondhand lumber for forms, they shall be cleaned and all nails removed therefrom. Immediately before pouring, all forms shall be thoroughly cleaned of all dirt, debris, and foreign matter.

Forms for exposed to view concrete beams, girders, columns, pilasters, and walls shall provide for a one (1) inch radius or flat bevel on external corners and as required to match abutting existing member profiles.

Box out for all slots, chases, recesses, or openings as shown on the Drawings and as required by the work of all other trades. Box out for all temporary openings, such as pipe spaces, etc., and build forms to seal up when, and as, required.

5. Placing: All excavations and forms shall be free of ponded water and clean of all debris before concrete is placed. Subgrade for slabs shall be wet down and forms shall be lightly oiled before placement.

Concrete shall be handled from mixer to the place of final deposit by methods which shall prevent the separation or loss of ingredients and shall be placed continuously in horizontal layers as near as possible to its final position to avoid rehandling.

The working face of the concrete shall be kept plastic and viable during the placement and no partially hardened concrete shall be deposited at any time. High frequency vibrators shall be supplemented by hand tamping, spading, etc., as necessary. Avoid vibrator contact with forms or reinforcing adjacent to partially set concrete. Over-vibrating so as to produce segregation of ingredients is also to be avoided.

For interior slabs on grade, screed underfill base to the plane to receive slab; then provide 10 mil polyethylene vapor barrier atop base. Lap edges 6" in direction of concrete pouring. Repair any holes other than those for grade stakes, with additional piece, lapping hole edges 12".

Expansion, control, and construction joints shall be provided as shown on the plans, or as herein specified, and any other locations will not be allowed without approval by the Architect.

After concrete has been placed and finished, it shall be protected against rain or immersion in water for twelve (12) hours.

6. Finishing: For all surfaces covered in final construction or below grade, the ties shall be broken off and all voids shall be grouted. For vertical surfaces exposed to view, all ties shall be broken off, all voids grouted, all fins, joints, ridges, and form defects carefully removed. Surfaces shall be rubbed with cement or abrasive bricks and water within 24 hours after removal of forms, and a general uniform appearance attained.

Interior slabs shall be floated to a uniform level surface with a uniform slope to drains, as shown on the Drawings. Final finish for building floors shall be hard steel trowel finish, giving a hard, dense, smooth surface. If sufficient fines cannot be worked up from the base slab, the Contractor may apply a dry mix of cement and sanding passing a No. 16 sieve and mixed in the ratio of 1 : 2 1/2 by volume. Compact

and work surface mix into base course. The surface mix shall never be added as a 'drier' to absorb excess surface water.

General Contractor shall be responsible for providing a level uniform surface on floor slabs to receive floor covering. Any grinding or filling shall be done at the General Contractor's expense with methods approved by the Architect.

Interior floor slab sealer and hardener shall be used only where floor is scheduled for sealed concrete.

7. Curing and removing of forms: After placement, exposed concrete not covered by forms shall be moist cured. After forms are removed, exposed concrete surfaces shall be moist cured for and additional time to total seven days since the placement of the concrete.

Concrete shall be cured at a temperature within the range of 50 degrees F, to 100 degrees F. For cold weather and hot weather requirements, see sections below.

Forms shall remain undisturbed until the concrete has gained sufficient strength to sustain its own weight and any temporary or permanent load that may be placed on it during the building of the structure. In no case shall forms be removed in less than three (3) days after placing concrete.

8. Expansion joints: Shall be of pre-molded asphalt impregnated fiberboard conforming to ASTM Specifications D-544, each one-half inch thick, or as noted, and extending the full depth of the slab in which they are to be used. Expansion joints shall be placed as shown on drawings. Exposed joints to be capped off with urethane sealant at exposed locations.

9. Interior control joints: Shall be 'screed-key' joint of depth as required, (3 1/2" for 4" slab) and as manufactured by Superior Concrete Accessories, Inc. or equal.

10. Exterior and/or interior control joints (at Contractor's Option for interior joints): Saw concrete slab within 12 hours after placing. Saw joints shall be 1/4_ of the total slab thickness in depth. Control joints shall be placed as indicated on drawings. If not indicated then no joint shall be more than 12' from the next parallel joint. Control joints shall define an area of not more than 150 square feet.

11. Miscellaneous:

Construct concrete bases for mechanical equipment as required. Provide inserts, hangers, metal ties, anchors, bolts, dowels, sleeves, slots, nailing strips, blocking, grounds, and other fastening devices required for attachment of other work. Accurately locate same in cooperation with other trades and secure in position before concrete is poured. Unless specifically indicated by drawings, do not install sleeves in any concrete beams, joists, or columns, except upon approval of Architect. Provide any other miscellaneous concrete items indicated by Drawings.

12. Concrete splash and splatter from footings and slabs shall be cleaned from adjacent materials which will be exposed. Cleaning shall be done as soon as practical after placement. **CONCRETE ON EXPOSED FINISH MATERIALS WILL NOT BE ACCEPTED.**

13. Testing: Routine testing of materials, or proposed mix designs, and of resulting concrete for compliance with technical requirements of the specifications shall be performed by a qualified,

experienced testing agency, employed by the Contractor and approved by the Architect. Provide Architect one copy of all tests performed. Cost of these tests shall be part of this contract.

The following minimum number of strength tests are required:

member	no. of tests required	# of cylinders req'd
Foundation walls, grade beams, columns, and elevated beams	1 each day of placement	3
Slabs on grade and elevated	1 each 4,000 s.f.	3
Piers	1 each day of placement	3

14. SPECIAL NOTE:

Concrete slab areas with concrete stain: some areas of the office addition have concrete stain on slab. See Specifications Section 'Concrete Finishes 03360'. Verify slab requirements w/ manufacturer/installer for slab finish. The concrete stain specified requires no liquid type membrane-forming sealing compound (Kure-N-Seal, etc) be installed. No power trowel finish (a profile similar to 100-120 grit sandpaper) is recommended by the specified concrete stain manufacturer.

END OF SECTION

Concrete Finishes ----- 03360

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for concrete finishes where shown on on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

1. Concrete Stain: H&C Semi-Transparent Decorative Stain, color to be selected
- (2) coats H&C Concrete sealer Solid Color Solvent-Based Clear

Part 3 Installation

1. Test a representative section for color before project is begun.
2. Application: per manufacturer's written instructions

END OF SECTION

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'. Include design mix, indicate Proportion or Property method used, required environmental conditions, and admixture limitations. Submit test reports on mortar indicating conformance to ASTM C270 and C780. Submit test reports on grout indicating conformance to ASTM C476 and C1019.
- 3. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 4. Related Sections:** Concrete Masonry Units 04300, Brick Masonry 04210.
- 5. Delivery, storage, and handling:** Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.
- 6. Environmental requirements:** Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- 7. Mix tests:**
 - Testing of Mortar Mix: In accordance with ASTM C780.
 - Test mortar mix for compressive strength, consistency, mortar aggregate ration, water content, air content, splitting tensile strength and color.
 - Testing of Grout Mix: In accordance with ASTM C1019.
 - Test grout mix for compressive strength and slump.

Part 2 Products

- 1. Materials:**
 - A. **Portland cement:** ASTM C150, Type I, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce mortar color to match existing.
 - B. **Mortar aggregate:** ASTM C144, standard masonry type, except for joints less than 1/4" use aggregate graded with 100% passing the No. 16 sieve.
 - C. **Hydrated lime:** ASTM C207, Type S
 - D. **Water:** Clean and potable
- 2. Mortar Mixes:** Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds or other admixtures,

unless otherwise indicated. Do not use calcium chloride in mortar. Combine and thoroughly mix cementitious, water and aggregates in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content.

3. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for types of mortar required, unless otherwise indicated. Limit cementitious materials in mortar to portland cement - lime. Use Type S mortar for below grade walls, otherwise Type M.

END OF SECTION

Concrete Masonry Units ----- 04300

Part 1 General

1. Related documents: The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.

2. Work included: In general, this includes, but is not limited to providing all labor, materials, and equipment for concrete masonry units where shown on the drawings, as specified herein, and as needed for a complete and proper installation.

3. Shop Drawings and Product Data: Submit in accordance with Section 01330 'Submittal Procedure'.

4. Substitutions: Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

5. Project conditions: Prevent grout, mortar, or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface. Protect sills, ledges and projections from droppings of mortar.

6. Cold weather protection: Do not lay masonry units which are wet or frozen. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch. Remove masonry damaged by freezing conditions.

Perform the following construction procedures while masonry work is progressing. Temperature ranges indicated below apply to air temperature existing at time of installation except for grout. For grout, temperature ranges apply to anticipated minimum night temperatures. In heating mortar and grout materials, maintain mixing temperature selected within 10 degrees F.

- 40 degrees F. to 32 degrees F. : Mortar: heat mixing water to produce mortar temperature between 40 degrees F. and 120 degrees F.
- 32 degrees F. to 25 degrees F. :Mortar: heat mixing water and sand to produce mortar temperature between 40 degrees F. and 120 degrees F.; maintain temperature of mortar on boards above freezing.
- 25 degrees F. to 20 degrees F. : Mortar: heat mixing water and sand to produce mortar temperature between 40 degrees F. and 120 degrees F.; maintain temperature of mortar on boards above freezing. Heat both sides of walls under construction using salamanders or other heat sources.

- 20 degrees F. and below: Mortar: heat mixing water and sand to produce mortar temperature between 40 degrees F. and 120 degrees F.; Masonry Units: Heat masonry units so that they are above 20 degrees F. at time of laying. Provide enclosure and auxiliary heat to maintain an air temperature of at least 40 degrees F. for 24 hours after laying units. Do not heat water for mortar and grout to above 160 degrees F.

Part 2 Products

1. Concrete masonry units: grade N, Type II, non-moisture controlled units. See Drawings for sizes and textures.

2. Hot-dip galvanized steel wire: ASTM A 82 for uncoated wire and with ASTM A 153, Class B-2 (1.5 oz. per sq. ft. of wire surface) for zinc coating applied after prefabrication into units.

3. Joint reinforcement: Provide welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10', with prefabricated corner and tee units, and complying with requirements indicated below:

- **width:** Fabricate joint reinforcement in units with widths of approximately 2" less than nominal width of walls and partitions as required to provide mortar coverage of not less than 5/8" on joint faces exposed to exterior and 1/2" elsewhere.
- **Wire size for side and cross rods:** 0.1483" diameter
- **For single-wythe masonry** provide type as follows with single pair of side rods: Ladder design with perpendicular cross rods spaced not more than 16" o.c.

4. Anchor bolts: Provide steel bolts with hex nuts and flat washers complying with ASTM A 307, Grade A, hot-dip galvanized to comply with ASTM C 153, Class C, in sizes and configurations indicated.

5. Reinforcing bars: Deformed steel, ASTM A 615, Grade 60 for bars No. 3 to No. 18.

Part 3 Execution

1. Installation, general: Do not wet concrete masonry units. Cleaning Reinforcing: Before placing, remove loose rust, ice, and other coatings from reinforcing.

2. Thickness: Build cavity and composite walls, floors and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness indicated.

Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.

Cut masonry units using motor-driven saws (dry cutting) to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining work. Use full-size units without cutting where possible.

3. Tolerances:

Maximum Variation From Alignment of Columns:	1/4 inch
Maximum Variation From Unit to Adjacent Unit:	1/32 inch
Maximum Variation From Plane of Wall:	1/4 inch in 10 feet
Maximum Variation From Plumb:	1/4 inch
Maximum Variation From Level Coursing:	1/8 inch in 3 feet
Maximum Variation of Joint Thickness:	1/8 inch in 3 feet
Maximum Variation From Cross Sectional Thickness of Walls:	1/4 inch

4. Layout: Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate openings, movement-type joints, returns and offsets. Avoid the use of less than half size units at corners, jambs and wherever possible at other locations. Dimensions shown on plans (unless otherwise noted) indicate nominal CMU thickness and layout and location of those walls should be to centerline of nominal thickness indicated.

5. Lay-up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.

6. Pattern bond: Lay exposed masonry in the bond pattern shown. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4" horizontal face dimensions at corners or jambs.

7. Stopping and resuming work: Rake back 1/2 unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh masonry.

8. Built-in work: Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.

9. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells.

10. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.

11. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise indicated.

12. Remove masonry units disturbed after laying, clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.

13. Collar joints: After each course is laid, fill the vertical longitudinal joint between wythes solidly and with mortar for the following work: Non-loadbearing interior walls or partitions where metal ties or horizontal reinforcing are indicated for structural bonding and nominal thickness of wall or partition is required to meet code requirements for height-to-thickness ratio.

14. Horizontal joint reinforcement: Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls, 1/2" elsewhere. Lap reinforcing a min. of 6". Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise noted. Reinforce walls with continuous horizontal joint reinforcing unless specifically noted to be omitted. Provide continuity at corners and wall intersections by use of prefabricated 'L' and 'T' sections. cut and bend reinforcement units as directed by manufacturer.

Space reinforcement for single-wythe walls at 16" o.c. vertically, unless otherwise indicated.

Reinforce masonry openings greater than 1'-0" wide with horizontal joint reinforcement placed in 2 horizontal joints approx. 8" apart, immediately above the lintel and immediately below the sill. Extend reinforcement a min. of 2'-0" beyond jambs of the openings except at control joints. In addition to wall reinforcement, provide additional reinforcement at openings as required to comply with drawings and details.

15. Repair, pointing and cleaning: Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

Pointing: during the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings and adjacent work to provide a neat, uniform appearance, prepared for application of sealants.

Note: Grout cells of masonry units full at corners, edge of openings, and at all vertical reinforced bars.

16. Insulation Installation: insulation contractor to be approved by insulation manufacturer. All applicators to be trained and certified in the use of the insulation materials and equipment.

END OF SECTION

Manufactured Stone Veneer ----- 04700

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for manufactured stone where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Verification Samples:** Following initial sample selection submit "laid-up" sample board using the selected stone and mortar materials and showing the full range of colors expected in the finished Work; minimum sample size: 3 by 3 feet

Part 2 Products

Manufactured Stone: The following manufactured stone specified shall be used as the basis for the bidding. The contractor may submit samples of similar manufactured stone to Architect for consideration (during construction); but should be prepared to furnish specified manufactured stone.

Manufactured Stone: Eldorado Stone, Mountain Ledge, 'Sierra'. Height: 1-4", Length: 4"-18", thickness: 1" – 3.5".

Manufacturer:

Eldorado Stone, LLC
1370 Grand Ave., Bldg. B
San Marcos, CA 92069

Tel: (800) 925-1491
Fax: (760) 736-3840

E-Mail: customerservice@eldoradostone.com

Website: www.eldoradostone.com

Part 3 Execution

1. Examination: Examine substrates upon which work will be installed. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates. Commencement of work by installer is acceptance of substrate.

2. Preparation
 - a) Protection: Protect adjacent work from contact with mortar.
 - b) Surface Preparation: Prepare substrate in accordance with manufacturer's installation instructions for the type of substrate being covered.
3. Installation: Install and clean stone in accordance with manufacturer's installation instructions for Jointless/Dry-Stacked installation as specified above.
4. Cleaning: Remove protective coverings from adjacent work. Cleaning Veneer Units: Wash with soft bristle brush and water/granulated detergent solution. Rinse immediately with clean water. Removing Efflorescence: Allow veneer to dry thoroughly. Scrub with soft bristle brush and clean water. Rinse immediately with clean water; allow to dry. If efflorescence is still visible, contact ES Customer Service for assistance.

END OF SECTION

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for roof hatches where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Measurements:** The contractor shall take measurements at the building as may be required and shall be responsible for the accuracy of such measurements.

Part 2 Products

- 1. Materials:** shall conform to the following standards:
 - Structural Steel Members: ASTM A992
 - Structural Tubing: ASTM A500, Grade B.
 - Pipe: ASTM A53, Grade B.
 - Bolts, Nuts, and Washers: ASTM A325.
 - Anchor Rods: ASTM F1554.
 - Welding Materials: AWS D1.1; type required for materials being welded.
 - Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7,000.

Part 3 Execution

- 1. Fabrication:** Insofar as possible work shall be done in the shop. Fabricate from approved drawings only. Structural steel framing connections, parts, and accessories shall (where applicable) conform to the Handbook of the American Institute of Steel Construction, with latest amendments. Steel sections bearing on walls shall conform to the Handbook of the American Institute of Steel Construction, latest edition.

Provide holes and connections as required for work of other trades.

- 3. Shop painting:** Metal shall receive prime coat of approved shop paint.

4. Field Assembly:

- Set structural members accurately to lines and elevations indicated.
- Align and adjust members forming frame or structure before permanently fastening.
- Clean bearing surfaces and other surfaces that will be in permanent contact before assembly.
- Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- Level and plumb individual members of structure within specified AISC tolerances.
- Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.

5. **Splice members** only where indicated and accepted on shop drawings.

6. **Allow for erection loads.** Provide temporary bracing to maintain framing in alignment until completion of erection and installation of permanent bridging and bracing.

7. **Field weld components** indicated on Drawings.

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

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

10. **Grout** under base plates.

End of Section

Rough Carpentry ----- 06100

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for rough carpentry where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Definition of Rough Carpentry:** includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated. Includes rough carpentry, , osb sheathing on walls, any furring grounds, nailers or blocking. Provide lumber for support or attachment of other construction.
- 6. Product handling:** Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
- 7. Coordination:** Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow attachment of other work.

Part 2 Products

- 1. Lumber standards:** Manufacture lumber to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
- 2. Nominal sizes** are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use. Provide dressed lumber, S45, unless otherwise indicated. Provide lumber with 15% maximum moisture content at time of dressing and shipment for sizes 2" or less in nominal thickness, unless otherwise indicated.
- 3. Dimension lumber:** No. 2 grade, Douglas Fir, Douglas-Fir-Larch, or S-P-F. Fb (min. extreme fiber stress in bending): 1200 psi.

4. Miscellaneous lumber: Provide wood for support or attachment of other work including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows: moisture content: 19% max. for lumber items not specified to receive wood preservation treatment. Grade: standard grade light framing size lumber of any species or board size lumber as required. No. 3 Common or Standard grade boards per WCLIB or WWPA rules or No. 3 boards per SPIB rules.

5. Construction panels: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood panels and, for products not manufactured under PS 1 provisions, with American Plywood Association (APA) "Performance Standard and Policies for Structural-Use Panels", Form No. E445.

6. Plywood backing panels: For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels; ADA C-D PLUGGED INT with exterior glue, in thickness indicated, or if not otherwise indicated, not less than 15/32".

7. Fasteners and anchorages: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers, and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails. Where rough carpentry work is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A 153).

Part 3 Execution

1. Installation, general: Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement. Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Use screws, except as otherwise indicated. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.

2. Wood grounds, nailers and blocking: Provide wherever shown and 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 location with other work involved. Attach to substrates as required to support applied loading. Countersink screws flush with surfaces, unless otherwise indicated.

3. Wood framing: Provide framing members of sizes and on spacings shown, and frame openings as shown. Do not splice structural members between supports. Anchor and nail as shown and to comply with "Recommended Nailing Schedule" of "National Design Specifications for Wood Construction" published by N.F.P.A. Firestop concealed spaces of wood framed walls and partitions at each floor level and at the ceiling line of the top story.

4. Installation of construction panels: Comply with applicable recommendations contained in Form No. E 30F, "APA Design/Construction Guide - Residential & Commercial", for types of construction panels and applications indicated. Fastening methods: sheathing - nail to framing. plywood backing panels - nail to supports.

END OF SECTION

Finish Carpentry ----- 06220

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for finish carpentry where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Product delivery, storage, and handling:** Protect finish carpentry materials during transit, delivery, storage, and handling to prevent damage, soiling and deterioration.
- 6. Job conditions:** Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install finish carpentry until required temperature and relative humidity conditions have been stabilized and will be maintained in installation areas.

Part 2 Products

- 1. Wood product quality standards:**
 - Softwood Lumber Standard: PS 20
 - Plywood Standard: PS 1/NASI A199.1
 - Hardwood Lumber Standard: National Hardwood Lumber Association (NHLA) rules
 - Woodworking Standard: Architectural Woodwork Institute (AWI) "Quality Standards".
- 2. Materials:** Nominal sizes are indicated, except as shown as detailed dimensions. Provide seasoned (KD) lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated. Lumber for transparent finish (stain or clear): use pieces made of solid lumber stock.
- 3. Fasteners and anchorages:** Provide nails, screws, and other anchoring devices of the type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications. Where finish carpentry is exposed on exterior or in areas of high relative humidity, provide fasteners and anchorages with a hot-dipped zinc coating (ASTM A 153).

Part 3 Execution

1. Condition wood materials to average prevailing humidity conditions in installation areas prior to installing.

2. Backprime lumber for painted finish exposed on the exterior or, where indicated, to moisture and high humidities on the interior. Comply with requirements of section on painting within Painting Specifications Section 09900.

3. Installation, general: Install the work plumb, level, true and straight with no distortions. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

4. Installing standing and running trim: Install with minimum number of joints possible, using full-length pieces to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners. to produce tight fitting joints with full surface contact throughout length of joint. Use scarf joints for end-to-end joints. Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrate. Secure to grounds, stripping and blocking with countersunk, concealed fasteners, and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated.

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

END OF SECTION

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for millwork where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Cabinets & Countertops:** These cabinets are to be custom made for the project, not stock units. See Drawings for sizes, locations, and details. Cabinet materials shall be as indicated on drawings and as follows:
 - a. project contains cabinets with plastic laminate on all exposed surfaces along with conference room cabinets which has oak (stained & finished) base cabinets.
 - b. Interior shelves and non-exposed surfaces shall be melamine-covered board.
 - c. Countertop style: See drawings for post formed top or square edge front.
- 2. Materials:**
 - a. **Plastic Laminates:** Plastic laminate shall be as manufactured by Wilsonart, Formica, or Nevamar. Color(s) shall be selected by Architect.
 - b. **Melamine covered board:** Shall be 3/4" thick, on one or both sides as indicated on the Drawings.
 - c. **Drawers:** All drawers shall be Blum Metabox design with separate front. Drawer backs and bottoms shall be constructed of 5/8" thick 45# medium density melamine covered board with laminated faces and matching PVC top edges.
 - d. **Doors:** (plastic laminate: Solid hinged doors shall be 3/4" thick melamine covered board, with plastic laminate on exposed surfaces).
 - e. **Cabinet backs:** Fixed cabinets, in applications where the back is unexposed, shall have 1/4" thick melamine covered board back panels.
 - f. **Adjustable shelves** (Melamine covered board): All adjustable shelves shall be 3/4" thick when under 36" long and 1" thick when 36" long and over. Shelves shall be constructed of 45# density melamine covered board. Front edge shall have PVC self edge to match trim group color.
 - g. **Frame rails:** Frame rails between drawers shall be full length, 3/4" thick x 4" wide, pinned, and fastened into cabinet sides. The front leading edge shall be covered with plastic laminate.

- h. **Drawer / door pulls:** 4" brushed chrome, wire type. Verify finish and style with Architect.
- i. **Hinges:** European style concealed hinges, 125 degrees swing.
- j. **Locks:** If indicated on Drawings, provide cylinder type, die cast, with five (5) disc tumbler mechanism. Each lock shall come with a milled brass key with keying to be determined.

3. Construction:

- a. **Construction jointery:** Cabinet corner joints shall incorporate dado construction and be glued and clamped under pressure to assure rigid load-bearing corner joints.
- b. **Mounting supports:** Base and wall cabinets shall have a support rail that is mechanically fastened to the upper back for mounting units to walls.

Part 3 Execution

1. Surface conditions: Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected. Condition cabinet work to prevailing humidity and temperature conditions prior to installation.

2. Installation:

- a. General Contractor and subcontractor/supplier shall coordinate work and verify dimensions. If field dimensions for millwork vary from drawings dimensions in a way that effects the millwork design, contact Architect.
- b. Install work in accordance with AWI "Quality Standards" Grade "Custom".
- c. Set and secure casework in place rigid, plumb, and level.
- d. Provide cutouts for plumbing fixtures, appliances, and other fixtures and fittings.
- e. Use fixture attachments at concealed locations for wall mounted components.
- f. Carefully scribe casework which is against other building materials, leaving gaps of 1/32" maximum. Use filler strips, not additional overlay trim for this purpose.
- g. Secure cabinets and counter bases to floor using appropriate anchorages.
- h. Adjust moving or operating parts to function smoothly and correctly.
- i. Adjust hardware for fit and alignment of doors and drawers.
- j. Seal junction of walls and cabinet tops, sides, splashes, and countertops with latex sealant.
- k. Clean all exposed cabinet surfaces and cabinet interiors.

END OF SECTION

Building Insulation ----- 07210

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for building insulation where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Work NOT Included:** Batt insulation on ceiling tiles shall be furnished and installed by Suspended Ceiling Contractor.

Part 2 Products

- 1. Roof & Wall Insulation of Pre-Engineered Steel Building:** White vinyl face batt insulation; UL FHC 25/50 rating. Walls: 4" thick (R-13) Roof: 6" thick (R-19).
- 2. Sound Batt Insulation:** Unfaced fiberglass batt insulation, R-11, equal to Owens Corning "Sonobatt" or equal. Install full height in walls indicated on Floor Plan.
pre-approved manufacturers:
 - CertainTeed
 - Johns Manville
 - Owens-Corning
- 3. Fiber Glass Building insulation:** Blanket type insulation, ASTM C 665, Type II, Class C, Category 1. See Drawings for R-values. Unless otherwise noted provide as follows:
 - 3 5/8" mtl. stud wall: R-13
 - 6" mtl. stud wall: R-19

Glass fiber insulation pre-approved manufacturers:

- CertainTeed
- Johns Manville
- Owens-Corning

Part 3 Execution

1. Examine job conditions: Examine substrates and conditions under which insulation work is to be performed. Do not proceed with installation until any unsatisfactory conditions are corrected.

Clean substrates of substances harmful to insulations or vapor barriers, including removal of projections which might puncture vapor barriers.

2. Installation: Install per manufacturer's written instructions. Extend insulation full thickness over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

END OF SECTION

Exterior Insulation & Finish System ----- 07240

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for the EIFS system where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Manufacturer/System:** Dryvit "Outsulation".
Other approved manufacturers:
Sto Corporation
Senerflex PB EIFS Wall System by BASF.
- 2. Insulation:** At all locations, the EPS Foam Insulation boards shall be encapsulated by the Binder/Primer mortar and finish coat products, or the Substrate.
- 3. Color and finish:** Quartzputz finish. Color shall be selected by the Architect. Sample panels showing texture and color must be approved by Architect before commencing work.
- 4. Substrate:** Exterior grade gypsum sheathing or plywood, see Drawings.
- 5. Materials:** All components of the system shall be as specified by the manufacturer. No substitutions of, or additions of, other materials shall be submitted without prior written approval from the E.I.F.S. manufacturer.
- 6. Reinforcing fiberglass mesh:** Standard Plus, 6 oz. mesh

Part 3 Execution

- 1. Delivery:** All materials shall be delivered in original unopened containers and/or packages with labels intact.

2. Initial inspection: Examine the job conditions which affect execution, performance, or job quality of workmanship required. DO NOT proceed with work until existing unsatisfactory conditions are corrected, adjusted, or otherwise controlled. Substrates shall be clean, dry, smooth and true to plane or plumb within 1/4" tolerance in every 10 feet vertically and horizontally. Substrates shall comply with contract documents and manufacturers specifications.

3. Application: Per manufacturer's recommendations.

END OF SECTION

Flashings, Gutters & Downspouts ----- 07600

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for flashings, gutters, and downspouts where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Flashings:** Pre-painted finish (where exposed), 24 ga. metal flashing.
- 2. Gutters & Downspouts:** part of the pre-engineered building package. Gutter size/capacity, downspout size/spacing to be designed by P.E.S. engineer. Downspouts are located on exterior elevations and roof plans and should be utilized as a guide for locations. Architect will review locations on P.E.S. submittal drawings.
- 4. Splashblocks:** Downspouts to be collected to underground piping per civil engineering drawings. If any downspouts are shown to discharge onto grade, provide a concrete splash block at each downspout location.

Part 3 Execution

- 1. Surface conditions:** Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

END OF SECTION

Joint Sealers & Firestopping ----- 07900

Part 1 General

1. Related documents: The provisions of the General and Supplementary Conditions and General Requirements apply to the work specified in this section.

2. Work included: In general, this includes, but is not limited to providing all labor, materials, and equipment for joint sealers and firestopping where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

3. Shop Drawings and Product Data: Submit in accordance with Section 01330 'Submittal Procedure'.

4. Substitutions: Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

5. Joint Sealers: Regardless of any specific mention on the Drawings showing various items to be caulked, exterior caulking will be required wherever it is needed to prevent passage of moisture or air into the building or into construction where damage would result. In particular, caulking shall be applied to:

- a) Exterior: joints between steel or aluminum and masonry/concrete, surface applied flashings, expansion joints in concrete paving, joints between paving/sidewalks and building elements, building control and expansion joints, and to any incidental areas where required for waterproofing, or to complete the installation of material and/or equipment specified under this contract.
- b) Interior: joints between steel or aluminum and masonry/concrete, between countertop splashes and walls, building control and expansion joints, around plumbing fixtures, and to any other incidental areas where required to complete the installation of material and/or equipment specified under the contract.
- c) System performance requirements:
 1. system performance to achieve moisture and air tight joint seals.
 2. General Sealer Performance: select materials for compatibility with joint surfaces and other indicated exposures. Select modulus of elasticity and hardness or grade recommended by manufacturer for each application
 3. Where exposed to foot traffic, select materials of sufficient strength and hardness to withstand stiletto heel traffic damage, or deterioration of sealer system
 4. provide colors to match adjacent finish materials, or if not otherwise indicated, as selected by architect from manufacturer's standard colors.
 5. Note: contractor is cautioned not to expect to be allowed to correct inferior workmanship of other trades with caulking.

6. Firestopping materials and accessories: Install firestopping materials at rated floors, walls and various partitions which contain openings, penetrating sleeves, piping, ductwork, conduit, and other items requiring firestopping within the area of work indicated for this project.

- a) Fireproofing materials: ASTM E814 and UL 1479: install material(s) to achieve a fire rating equivalent to the assembly in which it is placed. At rated wall penetrations not larger than a 4" nominal pipe or 16 square inches in overall cross-sectional area which contain non-combustible penetrating items: fill the annular space between the penetrating items and the passage of flame and hot gases sufficient to ignite cotton waste when subjected to UBC Standard No. 7-1.
- b) Surface Burning: ASTM E84, Max. flame spread/smoke developed rating of 0/10
- c) Fire Resistive Requirements: Rating N: Ext. bearing walls, interior bearing walls, ext. non-bearing walls, structural frame, partitions-permanent, floors-ceilings/floors, roofs-ceilings/roofs, corridor construction. Rating 1 Hour: shaft enclosures, stairway construction
- d) Firestopping Materials shall contain no asbestos. Durability and Longevity: permanent. Side effects during installation: non-toxic

7. Quality Assurance: perform work in accordance with manufacturer's requirements for preparation of surfaces and material installation instructions. Perform acoustical sealant application work in accordance with ASTM C919.

8. Warranty: submit a written warranty, signed by an authorized representatives of sealant manufacturer warranting that the work is as specified in the sections above is of the specified quality, free from defects, and in conformance with the requirements of the contract documents, and further promising to provide all labor and materials to repair or replace defective materials and workmanship including improper installation during a five year period following the date of substantial completion.

Part 2 Products

1. Exterior Sealants, General Purpose: Polyurethane sealant, ASTM C920 AND D1850, equal to:
Sika "Sikaflex 15LM"
Tremco "Dymeric 511"
Pecora Corp "Dynatrol II"
Sonneborn "Sonolastic NP-2"
Or approved equal

Sealant manufacturer shall be responsible for determining compatibility of sealant for use in joints between the various construction materials and for recommending proper surface preparation including primer(s) if necessary.

2. Exterior Sealants, Curtain Wall/Window System Perimeter and Glass Butt Joints:

Silicone Sealant: ASTM C920, Type S, Grade NS, single component, color to be selected by Architect. Equal to:

Dow Corning "795 Silicone Building Sealant"

Tremco "Spectrem 2"

Or approved equal

Sealants and joint fillers for joints within the window system construction as recommended by window manufacturer.

3. Exterior Sealants, for use at Roofing: as recommended by roofing system manufacturer.

4. Interior Sealants, for use at Concrete Paving: Polyurethane sealant, ASTM C920 and D1850, equal to "NR-200" as manufactured by Pecora Corp. or approved equal.

5. Interior Sealants, General Purpose: Acrylic emulsion latex; ASTM C834-86, equal to Pecora "AC-20 + Silicone"

Tremco "Tremflex 834"

Or approved equal.

6. Interior Sealants, Mildew Resistant Silicone: ASTM C920, equal to Dow/Corning "786 Mildew Resistant Silicone Sealant" or approved equal.

7. Interior Sealants, Expanding foam: UL Listed, Flame Retardant, ASTM E84 Class 1, for sealing joints between concrete panels, 'cracks' at perimeter of exterior door and window frames, mechanical equipment vents and louvers, and at piping, conduit and other misc. penetrations through exterior walls equal to "Geocel", or approved equal.

8. Interior Sealants, acoustical sealant: specialty sealant as manufactured by United States Gypsum Company, or others as approved by architect; for acoustically sealing the perimeter and openings in partitions.

9. Sealant Accessories: primer as recommended by sealant manufacturer. Joint cleaner: non-corrosive and non-staining type as recommended by sealant manufacturer. Joint backing: ASTM D1056 or D1565 round, closed cell polyethylene foam rod, oversized 30 to 50 percent larger than joint width. Bond Breaker: pressure sensitive tape recommended by sealant manufacturer.

10. Firestopping Caulking/Trowel Grade, Small Openings, Single Use: "Flamesafe FS-900 (caulk grade) FST-900 (trowel grade) as manufactured by International Protective Coatings Corporation or approved equal. Applications: many small to medium holes or pipe penetrations requiring infrequent changes or access. Firestopping material: water resistant, single component, sandable and paintable, UL Classified Systems for up to 3 hours. Rated

for use in UL Listed through-penetration firestop system numbers; UL 176, 235, 236, 364, 468, 469, 540, 541.

11. Firestopping Caulking/Trowel Grade – Large Openings, Single Use: “Flamesafe FS-500 (caulk grade) FST-600 (trowel grade) “KBS-Mortar Seal” (requires mixing with water) as manufactured by International Protective Coatings Corp, or approved equal. Typical application: many large holes or pipe penetrations requiring infrequent changes or access. FS-500 & FST-600 Rated for use in UL listed: UL 36, 37, 50,53,54,111,144, 145, 146, 200, 201. KBS-Mortar Seal: UL 173, 363,365, 366, 554,555, 556.

12. Safing Insulation – Large Openings, Single Use; Manufacturers: USG “Thermafiber Safing Insulation’, or approved equal. Typical applications: many large holes or pipe penetrations requiring infrequent changes or access. Rated for use in UL listed Through-Penetration Firestop system numbers: UL 449, 450, 510, 604, 605, 606, 607. Sealing compound: “Firecode” Compound as manufactured by USG as part of listed assembly.

13. Firestopping Accessories: Dam Material: as required, by Putty Manufacturer. Retainers: clips to support mineral fiber matting and primer as recommended by manufacturer.

13. Firestopping Putty (reusable): “Flamesafe Putty FSP-1000”, FSP-1077, FSP-1100 as manufactured by International Protective Coatings Corp. or approved equal. Typical applications: telecommunications, data and power cable penetrations which require frequent cable changes. Firestopping Material: non-hardening, water resistant, single component, tool-less installation. UL Classified for up to 3-hours.

14. Firestopping Bags (reusable): “Flamesafe KBS-Sealbags, as manufactured by International Protective Coatings Corp., or approved equal. Typical applications: communications, data and power cable penetrations which require frequent cable changes. Material: stackable ‘brick-like’ bags constructed of coated fiberglass. UL classified systems for up to 4 hours.

Part 3 Execution

1. Joint Sealants: Verify that substrate surfaces and joint openings are ready to receive work. Remove loose materials. Verify that joint backing and release tapes are compatible with sealant. Install per manufacturer’s instructions. Install bond breaker where joint backing is not used. Apply within recommended application temperature ranges. Tool joints concave.

2. Firestopping: Verify that openings are ready to receive the work. Clean substrate surfaces. Install backing materials to arrest liquid material leakage. Install materials in accordance with manufacturer’s instructions and per applicable UL system requirements.

END OF SECTION

Hollow Metal Doors & Frames ----- 08110

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Standard and custom hollow metal doors and frames.
2. Steel sidelight, borrowed lite and transom frames.
3. Louvers installed in hollow metal doors.
4. Light frames and glazing installed in hollow metal doors.

B. Related Sections:

1. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
2. Division 08 Section "Flush Wood Doors".
3. Division 08 Section "Glazing" for glass view panels in hollow metal doors.
4. Division 08 Section "Door Hardware".
5. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
10. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.

11. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
12. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
14. FEMA 361 2008 – Design and Construction Guidance for Community Safe Rooms.
15. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters.
16. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
17. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
18. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
- C. Shop Drawings: Include the following:
 1. Elevations of each door design.
 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of anchorages, joints, field splices, and connections.
 6. Details of accessories.
 7. Details of moldings, removable stops, and glazing.
 8. Details of conduit and preparations for power, signal, and control systems.
- D. Samples for Verification:
 1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40" above sill) or UL 10C.

1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
 2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
 3. Smoke Control Door Assemblies: Comply with NFPA 105.
 - a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.
- D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.
- E. Severe Storm Shelter Openings: Provide complete door systems for hurricane or tornado storm shelters, and other areas of refuge, complying and tested according to FEMA 361, Second Edition (2008), Design and Construction Guidance for Community Safe Rooms; and ICC 500 (2008), ICC/NSSA Standard for the Design and Construction of Storm Shelters.
1. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.
- F. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. CECO Door Products.
 - 2. Curries Company.
 - 3. Steelcraft.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.
- B. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard polyurethane. Where indicated, provide doors fabricated as thermal-rated assemblies with a minimum R-value of 3.2 or better.
3. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
4. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
5. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
6. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
 - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
2. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

D. Manufacturers Basis of Design:

1. CECO Door Products Polyurethane Core: Imperial Series.

2.4 HOLLOW METAL DOORS FOR SEVERE STORM SHELTERS

A. General: Provide complete tornado or hurricane resistant door and frame shelter assemblies constructed to resist the design wind pressures for components and cladding and missile impact loads as described in ICC 500 - 2008, ICC/NSSA Standard for the Design and Construction of Storm Shelters. Only single opening and paired opening doors and their frames constructed to resist calculated design wind pressures and laboratory tested missile impacts are acceptable.

1. Door systems, both single doors and paired openings, tested and complying with ICC 500 and FEMA 361 (2008), Design and Construction Guidance for Community Safe Rooms and supported by third party test results.

2. Sheets fabricated on exterior openings from commercial quality hot dipped zinc coated steel complying with ASTM A924 A60. Gauges to be in accordance with manufacturers tested assemblies.
3. Vertical Edges: Vertical edges to have the face sheets joined by a continuous weld extending the full height of the door. Welds are to be ground, filled and dressed smooth. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
4. Top Edge: Reinforce top of doors with a continuous steel channel extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached and welded in place with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
5. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".

B. Manufacturers Basis of Design:

1. CECO Door Products StormPro Series.
2. Curries Company StormPro Series.

2.5 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Manufacturers Basis of Design:
 - a. CECO Door Products – SU Series.
 - b. Curries Company – M Series.
 - c. Curries Company - Thermal Break TQ Series.

C. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
3. Manufacturers Basis of Design:
 - a. CECO Door Products SU Series.
 - b. Curries Company M Series.

D. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

E. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.6 FRAMES FOR SEVERE STORM SHELTERS

- A. General: Subject to the same compliance standards and requirements as standard hollow metal frames, provide complete tornado or hurricane resistant door and frame assemblies, for both single doors and paired openings, tested and labeled as complying with ICC 500 and FEMA 361 and supported by third party test results.
 - 1. Fabricate exterior frames from 14 gauge hot dipped zinc coated steel that complying with ASTM designations A924 A60.
 - 2. Manufacturers Basis of Design:
 - a. CECO Door Products - StormPro Series.
 - b. Curries Company - StormPro Series.

2.7 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 - 2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
 - 3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.
 - 4. FEMA 361 Storm Shelter Anchors: Masonry T-shaped, wire masonry type, or existing opening type anchors.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.
- C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.8 LIGHT OPENINGS AND GLAZING

- A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.
- B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.
- C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.
- D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for

use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

2.9 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.10 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.
- C. Hollow Metal Doors:
 - 1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
 - 2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
 - 3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
 - 4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
- D. Hollow Metal Frames:
 - 1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
 - 3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
 - 4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.

5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
 6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
 7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
 8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 9. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 120 inches high.
 - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
 - b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
 - c. Severe Storm Shelter Openings: Provide jamb, head, and sill anchors in accordance with manufacturer's tested and approved assemblies.
 10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
- E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
 4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.11 STEEL FINISHES

- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.
- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
 - 1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and

- secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
 4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.
- 3.4 ADJUSTING AND CLEANING
- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
 - B. Remove grout and other bonding material from hollow metal work immediately after installation.
 - C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION

Wood Doors ----- 08210

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for wood doors where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval
- 5. Warranty:** min. five (5) year written warranty

Part 2 Products

- 1. Acceptable manufacturer's:** Specific products or materials manufactured by any of the following listed manufacturer's are "acceptable", (not approved) only if the specific product or material can evidence exact compliance with the contract documents.
 - Algoma Hardwoods, Inc.
 - Eggers Industries, Architectural Door Div.
 - Graham Manufacturing Corp.
 - Maiman Company
 - Marshfield
 - Oshkosh Architectural Door Co.
 - VT Industries
- 2. Wood door:** Seven (7) ply; per AWI/NWWDA Standards and ANSI/HPVA grading rules; Flush doors, A Grade, Plain Sliced Red Oak Veneer. Edges shall match face veneer.
- 3. Finishing:** Factory finish, furnish samples for color selection to architect
- 3. Prefitting and preparation for hardware:** Prefit and premachine all wood doors at factory. Premachine doors in accordance with final approved hardware and frame schedules. Fire doors shall be machined in strict compliance of NFPA-80-95. Premachine doors within industry tolerances. A plus or minus 1/32" will be allowed on all hardware locations. A plus 1/32" minus 1/64" tolerance will be allowed on lock front preparation cutouts.

4. General: Comply with AWI Quality Standards Section 1300 or NWWDA I.S.1-A for premium grade wood doors except to meet or exceed requirements herein specified. Completely factory prefit to required size ready for installation at project site; no on-jobsite trimming permitted. Prepare in accordance with frame shop drawings and schedule, hardware schedule and templates. Thickness: 1 3/4" inches thick unless indicated otherwise on door schedule.

Part 3 Execution

1. Preparation: Examine door frames and verify frames are of correct type and have been installed for proper hanging of corresponding doors.

2. Installation: Install in accordance with manufacturer's written instructions. Install fire doors in accordance with NFPA-80-1995. Install accurately in frame, within clearances specified. Install hardware in accordance with manufacturer's written instructions and associated templates. Do not field cut doors to opening sizes smaller than those for which doors were manufactured. Do not install door in frame set out of plumb or square. Install to operate freely, but not loosely, free from hinge bound conditions, striking or binding. Do not install in frames which would hinder operation of doors. Hang free from rattling when in latched position. Pilot holes to be drilled for screws attaching hinges, lock hardware all other devices to the stile or face of wood doors.

3. Adjusting: Adjust and check each door to ensure proper operating and function. Replace or rehang doors which are hinge bound and do not swing or operate freely. Replace or rehang doors which are warped, twisted, or which are not in true planes.

END OF SECTION

Upward Acting Sectional & Rolling Service Doors --- 08360

Part 1 General

1. Section includes:

- A. Division 0 Bidding & Contract Documents
- B. Division 1 General Requirements
- C. In general, this includes, but is not limited to providing the upward acting sectional doors where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

2. Shop Drawings and Product Data: Submit in accordance with Section 01330 'Submittal Procedure'.

Part 2 Products

1. Upward Acting Sectional Door:

Manufacturer/Model: CHI Overhead Doors #3242

Other pre-approved manufacturer/model: Delden 624C

construction: insulated steel back

section thickness: 2"

exterior/interior steel thickness: 24 ga / 27 ga

insulation: r-value 8.0

20 psf. Wind load

color: white

2. Rolling Service Door: see Drawings for size. Cornell ESD10.

3. Other Pre-approved manufacturers: Clopay, Overhead Door, Raynor, Windsor Door.

4. Operation: electric operator, sized by supplier based on door size.

Part 3 Execution

1. Installation: Install door including sections, brackets, guides, tracks, etc. in accordance with final shop drawings and instructions by manufacturer.

END OF SECTION

Aluminum Entrances & Windows ----- 08410

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for the aluminum entrances and window systems where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Warranties:** All manufacturers shall provide a one (1) year warranty on units and a five (5) year warranty on insulating glass.

Part 2 Products

- 1. Aluminum 'Storefront' System & Windows:** System 403 Flush-Glazed Thermal Storefront as manufactured by EFCO Corporation, Monett, Missouri, or approved equal.
 - **Aluminum:** Extruded aluminum shall be 6063-T5 or T6 alloy and temper.
 - **Exterior Window units glass:** 1" insulated tempered (where required) glass units, 1/4" tinted at exterior, 1/2" airspacer, and 1/4" clear at interior.
 - **Interior Window units glass:** 1/4" clear glass.
 - **Dissimilar Metals:** All dissimilar metals must be properly insulated to prevent galvanic action.
 - **Fasteners:** All exposed fasteners must be aluminum or stainless steel.
 - **Thermal Barrier:** Poured-in-place two part polyurethane. A nonstructural thermal barrier is unacceptable.
- 2. Other pre-approved manufacturers:**
 - Kawneer
 - Manko Window Systems 2450 Series
 - Tubelite 14000 series
- 3. Fabrication:** All aluminum frame extrusions shall have a minimum wall thickness of .080". All exposed work shall be carefully matched to produce continuity of line and

design with all joints. System design shall be such that raw edges will not be visible at joints.

- Depth of frame shall not be less than 4 1/2"
- Face dimension shall not be less than 2"
- Frame components shall be screw spline construction.

4. Door & Window Frame Finish: Dark Bronze

5. Aluminum Entry Door:

- **Manufacturer:** EFCO Corp.
- **Model:** Series 300, medium stile width, see Door Schedule on Drawings
- **Glazing:** 1 / 4" tempered glass; tinted at exterior doors.

6. Aluminum Door Hardware: Provide the following hardware as scheduled or required:

- ball bearing butts
- "Ultraline Push/Pull Set" or Panic (See Door Schedule)
- closer with hold open
- aluminum thresholds with stop strip
- weatherstripping

7. Tinted Glass: See Window Elevations & Notes Sht. A7. Exterior tinted glass shall be PPG 'Solargray' glass. Exterior tinted glass noted as 'Privacy Glass' shall be PPG 'Graylite II' glass.

Part 3 Execution

1. Inspection: All openings shall be prepared by others to the proper size and shall be plumb, level and in the proper location and alignment as shown on the Drawings.

2. Installation: Installation shall be done in accordance with approved shop drawings and specifications. Storefront system shall be erected plumb and true, in proper alignment and relation to established lines and grades. Entrance doors shall be securely anchored in place to a straight, plumb and level condition without distortion. Weatherstripping contact and hardware movement shall be checked and final adjustment made for proper operation and performance of units. Furnish and apply sealing materials to provide a weather tight installation at all joints and intersections and at opening perimeters. Sealing material shall be in strict accordance with the manufacturer's written instructions. Caulk between aluminum frame and adjacent material with aluminum in colored sealant to match frame.

END OF SECTION

Door Hardware ----- 08110

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Door Hardware Schedule".
 - 2. Division 08 Section "Hollow Metal Doors and Frames".
 - 3. Division 08 Section "Flush Wood Doors".
 - 4. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. FEMA 361 2008 - Design and Construction Guidance for Community Safe Rooms.
 - 3. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters.
 - 4. ICC/IBC - International Building Code.
 - 5. NFPA 70 - National Electrical Code.
 - 6. NFPA 80 - Fire Doors and Windows.
 - 7. NFPA 101 - Life Safety Code.
 - 8. NFPA 105 - Installation of Smoke Door Assemblies.
 - 9. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.

- b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
 - 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
 - D. Proof of Certification: Provide copy of manufacturer(s) official certification or accreditation document indicating proof of status as a qualified installer of Windstorm assemblies.
 - E. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
 - F. Informational Submittals:
 - 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
 - G. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.
- 1.4 QUALITY ASSURANCE
- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
 - B. Installer Qualifications: A minimum 5 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
 - C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
 - D. Windstorm Assembly Installer Qualifications: Installers are to be factory trained and certified prior to project bid, and are responsible for commissioning, servicing, and warranting the installed equipment specified for the project.

- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Severe Storm Shelter Openings: Provide complete door systems for hurricane or tornado resistant storm shelters and other areas of refuge complying and tested according to FEMA 361, Second Edition (2008), Design and Construction Guidance for Community Safe Rooms; and ICC 500 (2008), ICC/NSSA Standard for the Design and Construction of Storm Shelters.
- G. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- H. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- I. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 - 3. Review sequence of operation narratives for each unique access controlled opening.
 - 4. Review and finalize construction schedule and verify availability of materials.
 - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- J. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Seven years for heavy duty cylindrical (bored) locks and latches.
3. Five years for standard duty cylindrical (bored) locks and latches.
4. Five years for exit hardware.
5. Twenty five years for manual surface door closer bodies.
6. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
- C. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.

- d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 - c. Tornado Resistant Assemblies: At a minimum, provide heavy weight hinges with stainless steel screws used in accordance with and specified as part of a Severe Storm Shelter Opening meeting ICC 500 and FEMA 361.
 4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 5. Acceptable Manufacturers:
 - a. Bommer Industries (BO).
 - b. Hager Companies (HA).
 - c. McKinney Products (MK).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
 1. Acceptable Manufacturers:
 - a. Bommer Industries (BO).
 - b. Hager Companies (HA).
 - c. McKinney Products (MK).
 - d. Pemko Manufacturing (PE).
- C. Pin and Barrel Continuous Hinges: ANSI/BHMA A156.26 Grade 1-600 certified pin and barrel continuous hinges with minimum 14 gauge Type 304 stainless steel hinge leaves, concealed teflon coated stainless pin, and twin self lubricated nylon bearings at each knuckle separation. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Acceptable Manufacturers:
 - a. Hager Companies (HA).
 - b. Markar Products (MR).
 - c. McKinney Products (MK).
 - d. Pemko Manufacturing (PE).

2.3 POWER TRANSFER DEVICES

- A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Acceptable Manufacturers:
 - a. Securitron (SU) - EL-CEPT Series.
 - b. Von Duprin (VD) - EPT-10 Series.

2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
 1. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor.
 2. Furnish dust proof strikes for bottom bolts.
 3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Door Controls International (DC).
 - c. Rockwood Manufacturing (RO).
 - d. Trimco (TC).
- B. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.

3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
5. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Hiawatha, Inc. (HI).
 - c. Rockwood Manufacturing (RO).

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
 1. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA).
- C. Cylinders: Original manufacturer cylinders complying with the following:
 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 5. Keyway: Manufacturer's Standard.
- D. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Two (2)
 2. Master Keys (per Master Key Level/Group): Five (5).
- E. Key Registration List (Bitting List):
 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 2. Provide transcript list in writing or electronic file as directed by the Owner.
- F. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Acceptable Manufacturers:

- a. Lund Equipment (LU).
- b. MMF Industries (MM).
- c. Telkee (TK).

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) – ML2000 Series.
- b. Sargent Manufacturing (SA) – 8200 Series.
- c. Yale Locks and Hardware (YA) – 8800FL Series.

- A. Multi-Point Locksets, Security: Three-point locking system device engineered for in-swinging door applications on windstorm safe shelter rooms. Extra heavy duty steel component construction securing the door to the frame at top, bottom and center latch positions. All three latching points are automatically activated when the device is locked.

1. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) - FE6800 Series.
- b. Sargent Manufacturing (SA) - FM7100 Series.
- c. Yale Locks and Hardware (YA) - 7380F Series.

- B. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified.

1. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt.

2. Locks are to be non-handed and fully field reversible.

3. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) – CL3300 Series.
- b. Sargent Manufacturing (SA) – 10 Line.
- c. Yale Locks and Hardware (YA) 5400LN Series.

- C. Cylindrical Locksets, Grade 2 (Standard Duty): ANSI/BHMA A156.2, Series 4000, Grade 2 certified.

1. Locks are to be non-handed and fully field reversible.

2. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) - CL3800 Series.
- b. Sargent Manufacturing (SA) - 7-Line.
- c. Yale Locks and Hardware (YA) - 5300LN Series.

D.

2.7 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
 - 4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
 - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 - 2. Strikes for Bored Locks and Latches: BHMA A156.2.
 - 3. Strikes for Auxiliary Deadlocks: BHMA A156.5.
 - 4. Dustproof Strikes: BHMA A156.16.

2.8 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
 - 1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
 - 2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
 - 3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
 5. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
 6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
 7. Vertical Rod Exit Devices: Provide and install interior surface and concealed vertical rod exit devices as Less Bottom Rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
 8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 10. Extended cycle test: Devices to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 9 million cycles.
 11. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 12. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
 - b. Sargent Manufacturing (SA) - 80 Series.
 - c. Yale Locks and Hardware (YA) - 7000 Series.
- C. Multi-Point Exit Devices for Severe Storm Shelter Openings: Multi-point exit devices specifically engineered for out-swinging door applications on tornado or hurricane resistant safe shelter rooms. Extra heavy duty steel component construction with each of the latching points automatically activated when the device is locked. The multi-point exit device is approved for usage as part of a complete ICC 500 (2008) and FEMA 361 door, frame and hardware assembly.

1. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) - FE5400S Series.
- b. Sargent Manufacturing (SA) - FM8700 Series.
- c. Yale Locks and Hardware (YA) - 7180F Series.

D. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.

- 1. Provide keyed removable feature where specified in the Hardware Sets.
- 2. Provide stabilizers and mounting brackets as required.
- 3. Provide electrical quick connection wiring options as specified in the hardware sets.
- 4. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) - 700/900 Series.
- b. Sargent Manufacturing (SA) - 980S Series.
- c. Yale Locks and Hardware (YA) - M200 Series.

2.9 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

- 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
- 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
- 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
- 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
- 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
- 6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt and security type fasteners as required for proper installation.

- B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) - DC8000 Series.
- b. Norton Door Controls (NO) – 9500 Series.
- c. Sargent Manufacturing (SA) - 281 Series.

2.10 ARCHITECTURAL TRIM

- A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, .050-inch thick.
4. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
5. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Hager Companies (HA).
 - c. Hiawatha, Inc. (HI).
 - d. Rockwood Manufacturing (RO).

2.11 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Acceptable Manufacturers:

- a. Burns Manufacturing (BU).
- b. Hager Companies (HA).
- c. Hiawatha, Inc. (HI).
- d. Rockwood Manufacturing (RO).

- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Acceptable Manufacturers:

- a. Rixson Door Controls (RF).
- b. Rockwood Manufacturing (RO).
- c. Sargent Manufacturing (SA).

2.12 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.

- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Acceptable Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko Manufacturing (PE).
 - 3. Reese Enterprises, Inc. (RS).

2.13 ELECTRONIC ACCESSORIES

- A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
 - 1. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA) – 3280 Series.
 - b. Securitron (SU) - DPS Series.

2.14 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.15 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SCHEDULE

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. RO - Rockwood
3. SA - Sargent
4. AD - Adams Rite
5. HS - HES
6. RF - Rixson
7. PE - Pemko
8. SU - Securitron

Hardware Schedule

Set: 1.0

Doors: 01

Description: Exterior

1 Continuous Hinge	MCK-12HD or MCK-14HD Door Height	CL	MK
1 Mortise Deadlock	MS1850S	628	AD
1 Cylinder	41 GMK	US32D	SA
1 Cylinder	124 41	US32D	SA
1 Push Bar & Pull	BF15747 T1HD	US32D	RO
1 Door Closer	281 CPS	EN	SA
1 Drop Plate	281D	EN	SA
1 Kit	581-2	EN	SA
1 Door Stop	462	US2C	RO
1 Threshold	279x224AFGT x Opening Width		PE
1 Sweep	345ANB x Door Width		PE

Notes: Weatherstripping furnished by Aluminum Door Supplier.

Set: 2.0

Doors: 02, 03, 08, 19, 50, 52, 54, 55, 64, 68, 85

Description: Exterior

1 Continuous Hinge	MCK-25HD PT x Door Height	CL	MK
1 Exit Device	16 55 56 8804 PSB GMK	US32D	SA
1 Door Closer	TB 281 CPS	EN	SA
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Door Stop	462	US2C	RO
1 Threshold	279x224AFGT x Opening Width		PE
1 Gasketing	S773D (Head & Jambs)		PE
1 Rain Guard	346C x Frame Width		PE
1 Sweep	345ANB x Door Width		PE
1 ElectroLynx Harness	QC-C1500P		MK
1 ElectroLynx Harness	QC-C x Length Required		MK

Door Hardware

08700 - 19

1 Electric Power Transfer	EL-CEPT	SU
1 Position Switch	DPS-M-BK	SU
1 Power Supply	BPS-24-1	SU
1 Multi-Class Card Reader	R40	HD

Operation: Door will normally be closed and locked. When a valid credential is presented to the wall mounted card reader the latch on the exit device will retract and the door can be pulled open. When the door comes back closed the door will relock. The exit device push bar has a REX or request to exit switch built into it. You can always push the push pad on the exit device and exit out of the space.

Set: 3.0

Doors: 04, 05

Description: Exterior

1 Continuous Hinge	MCK-25HD x Door Height	CL	MK
1 Exit Device	16 8804 PSB GMK	US32D	SA
1 Door Closer	TB 281 CPS	EN	SA
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Threshold	279x224AFGT x Opening Width		PE
1 Gasketing	S773D (Head & Jambs)		PE
1 Rain Guard	346C x Frame Width		PE
1 Sweep	345ANB x Door Width		PE
1 Position Switch	DPS-M-BK		SU

Set: 4.0

Doors: 06

Description: Exterior

2 Continuous Hinge	MCK-25HD x Door Height	CL	MK
2 Flush Bolt	555 12"	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Storeroom Lock	8204 OP GMK	US26D	SA
2 Door Closer	TB 281 CPS	EN	SA
2 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
2 Door Stop	462	US2C	RO
1 Threshold	279x224AFGT x Opening Width		PE
1 Gasketing	S773D (Head & Jambs)		PE
1 Rain Guard	346C x Frame Width		PE
1 Gasketing	S773D x Door Height		PE
2 Sweep	345ANB x Door Width		PE
2 Position Switch	DPS-M-BK		SU

Notes: Metal overlapping astragal furnished by Hollow Metal Door Supplier.

Install S773D gasketing to be installed on inside face of astragal to help seal between doors.

Set: 5.0

Doors: 07, 51

Description: Exterior

Door Hardware

08700 - 20

2 Continuous Hinge	MCK-25HD x Door Height	CL	MK
1 Removable Mullion	L980S	PC	SA
1 Exit Device	16 8804 PSB GMK	US32D	SA
1 Exit Device	16 8810 PTB GMK	US32D	SA
1 Cylinder	41 GMK	US32D	SA
2 Door Closer	TB 281 CPS	EN	SA
2 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
2 Door Stop	462	US2C	RO
1 Threshold	279x224AFGT x Opening Width		PE
1 Mullion Gasketing	5110BL		PE
1 Gasketing	S773D (Head & Jambs)		PE
1 Rain Guard	346C x Frame Width		PE
2 Sweep	345ANB x Door Width		PE
2 Astragal	305CN x Door Height		PE
2 Position Switch	DPS-M-BK		SU

Set: 6.0

Doors: 09

Description: Exterior

1 Continuous Hinge	MCK-25HD PT x Door Height	CL	MK
1 Exit Device	16 55 56 8804 PSB GMK	US32D	SA
1 Door Closer	TB 281 CPS	EN	SA
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Threshold	279x224AFGT x Opening Width		PE
1 Gasketing	S773D (Head & Jambs)		PE
1 Rain Guard	346C x Frame Width		PE
1 Sweep	345ANB x Door Width		PE
1 ElectroLynx Harness	QC-C1500P		MK
1 ElectroLynx Harness	QC-C x Length Required		MK
1 Electric Power Transfer	EL-CEPT		SU
1 Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Multi-Class Card Reader	R40		HD

Operation: Door will normally be closed and locked. When a valid credential is presented to the wall mounted card reader the latch on the exit device will retract and the door can be pulled open. When the door comes back closed the door will relock. The exit device push bar has a REX or request to exit switch built into it. You can always push the push pad on the exit device and exit out of the space.

Set: 7.0

Doors: 70

Description: Exterior

2 Continuous Hinge	MCK-25HD PT x Door Height	CL	MK
1 Removable Mullion	L980S	PC	SA
1 Exit Device	16 55 56 8804 PSB GMK	US32D	SA
1 Exit Device	16 55 8810 PTB GMK	US32D	SA

Door Hardware

1 Cylinder	41 GMK	US32D	SA
2 Door Closer	TB 281 CPS	EN	SA
2 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
2 Door Stop	462	US2C	RO
1 Threshold	279x224AFGT x Opening Width		PE
1 Mullion Gasketing	5110BL		PE
1 Gasketing	S773D (Head & Jambs)		PE
1 Rain Guard	346C x Frame Width		PE
2 Sweep	345ANB x Door Width		PE
2 Astragal	305CN x Door Height		PE
2 ElectroLynx Harness	QC-C1500P		MK
2 ElectroLynx Harness	QC-C x Length Required		MK
2 Electric Power Transfer	EL-CEPT		SU
2 Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Multi-Class Card Reader	R40		HD

Operation: Doors will normally be closed and locked. When a valid credential is presented to the wall mounted card reader the active door will have the latch of the exit device retract and the door can be pulled open. When the door comes back closed the door will relock. The push pad on the exit device of both leaves will have a request to exit or REX switch built into them. You can always exit out of these doors by pushing the push pad and exiting the space.

Set: 8.0

Doors: 69, 73, 74, 75, 76, 77, 78, 80, 81, 82, 84

Description: Exterior, Interior

Notes: All hardware furnished by Overhead Door Supplier.

Set: 9.0

Doors: 10

Description: Stairs (Rated)

3 Hinge	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Exit Device	12 8815 ETP	US32D	SA
1 Door Closer	TB 281 O	EN	SA
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409	US32D	RO
1 Gasketing	S88D (Head & Jambs)		PE

Set: 10.0

Doors: 11

Description: Airlock

1 Continuous Hinge	MCK-12HD or MCK-14HD Door Height	CL	MK
1 Mortise Deadlock	MS1850S	628	AD
1 Cylinder	41 GMK	US32D	SA
1 Cylinder	124 41	US32D	SA
1 Push Bar & Pull	BF15747 T1HD	US32D	RO

Door Hardware

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1 Door Closer	281 CPS	EN	SA
1 Drop Plate	281D	EN	SA
1 Kit	581-2	EN	SA
1 Threshold	271A x Opening Width		PE
1 Sweep	315CN x Door Width		PE

Notes: Weatherstripping furnished by Aluminum Door Supplier.

Set: 11.0

Doors: 12

Description: Reception

1 Continuous Hinge	MCK-12HD or MCK-14HD Door Height	CL	MK
1 Mortise Deadlock	MS1850S	628	AD
1 Cylinder	41 GMK	US32D	SA
1 Cylinder	124 41	US32D	SA
1 Push Bar & Pull	BF15747 T1HD	US32D	RO
1 Door Closer	281 CPS	EN	SA
1 Drop Plate	281D	EN	SA
1 Kit	581-2	EN	SA

Notes: Weatherstripping furnished by Aluminum Door Supplier.

Set: 12.0

Doors: 13

Description: Toilet

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Privacy Set	28 7U65 LP	US26D	SA
1 Wall Stop	409	US32D	RO
1 Gasketing	S773D x Door Height		PE

Set: 13.0

Doors: 14, 16, 17, 20, 21, 26, 30, 31, 32, 33, 34, 35, 36, 37, 38, 43, 44, 45

Description: Office

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Office Lock	28 7G05 LP GMK	US26D	SA
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO

Set: 14.0

Doors: 15, 25, 46, 47

Description: Conference, Meeting

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Passage Set	28 7U15 LP	US26D	SA

Door Hardware

08700 - 23

1 Wall Stop	409	US32D	RO
3 Silencer	608		RO

Set: 15.0

Doors: 18, 40

Description: Mechanical, Janitor

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Storeroom Lock	28 7G04 LP GMK	US26D	SA
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO

Set: 16.0

Doors: 23, 24, 53, 67

Description: Meeting, Break (FEMA)

1 Continuous Hinge	MCK-HG305 x Door Height	US32D	MK
1 Multi-Point Lock	FM7113 ECP GMK	US26D	SA
1 Door Stop & Holder	490	US26D	RO
3 Silencer	608		RO

Notes: Frames to be set so doors can swing 180 degrees.

Set: 17.0

Doors: 22, 27, 29

Description: Hall

3 Hinge	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Office Lock	28 10G05 LP GMK	US26D	SA
1 Door Closer	TB 281 CPS	EN	SA
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Threshold	271A x Opening Width		PE
1 Gasketing	S773D (Head & Jambs)		PE
1 Sweep	315CN x Door Width		PE

Set: 18.0

Doors: 28

Description: Stairs (Rated)

3 Hinge	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Exit Device	12 8813 ETP GMK	US32D	SA
1 Door Closer	TB 281 CPS	EN	SA
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Gasketing	S88D (Head & Jambs)		PE

Set: 19.0

Doors: 39

Description: Break

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Passage Set	28 7U15 LP	US26D	SA
1 Surface Overhead Stop	9 Series	652	RF
3 Silencer	608		RO

Set: 20.0

Doors: 41, 42

Description: Men, Women

3 Hinge	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Push Plate	70C	US32D	RO
1 Pull Plate	BF 107x70C	US32D	RO
1 Door Closer	281 O	EN	SA
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409	US32D	RO
3 Silencer	608		RO

Set: 21.0

Doors: 48, 49

Description: Break

3 Hinge	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Push Plate	70C	US32D	RO
1 Pull Plate	BF 107x70C	US32D	RO
1 Door Closer	281 PS	EN	SA
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
3 Silencer	608		RO

Set: 22.0

Doors: 60

Description: Break (FEMA)

1 Continuous Hinge	MCK-HG305 x Door Height	US32D	MK
1 Multipoint Exit Device	FM8713 ETP GMK	US32D	SA
1 Door Closer	TB 281 P10	EN	SA
1 Door Stop & Holder	490	US26D	RO
3 Silencer	608		RO

Notes: Frames to be set so doors can swing 180 degrees.

Set: 23.0

Doors: 61

Description: Janitor (FEMA)

1 Continuous Hinge	MCK-HG305 x Door Height	US32D	MK
1 Multi-Point Lock	FM7113 ECP GMK	US26D	SA
1 Surface Overhead Stop	9 Series	652	RF
3 Silencer	608		RO

Door Hardware

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Notes: Frames to be set so doors can swing 180 degrees.

Set: 24.0

Doors: 56, 62, 63, 65, 66, 72, 86, 88

Description: Pre-Fab Room

Notes: All hardware furnished by Door Supplier.

Set: 25.0

Doors: 79, 83, 87

Description: VS#1, VS#2

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Classroom Lock	28 10G37 LP GMK	US26D	SA
1 Surface Overhead Stop	9 Series	652	RF
3 Silencer	608		RO

END OF SECTION 08700

Metal Studs Framing System ----- 09110

Part 1 General

1. Section includes:

- A. Division 0 Bidding & Contract Documents
- B. Division 1 General Requirements
- C. In general, this includes, but is not limited to providing metal studs and accessories where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

2. Shop Drawings and Product Data: Submit in accordance with Section 01330 'Submittal Procedure'.

Part 2 Products

1. Interior (non-load bearing) metal stud partitions: Provide standard punched, hot dip galvanized steel studs, 3 5/8" wide, 25 ga. at 16" o.c.

2. Accessories: Provide all accessories including, but not necessarily limited to tracks, clips, anchors, fastening devices, and other accessories required for a complete and proper installation, and as recommended by the manufacturer of the steel studs used.

Part 3 Execution

1. Installation: Accurately layout partition and wall lines from the dimensions shown on the Drawings. Install studs and accessories in strict accordance with the manufacturer's recommendations, anchoring all components firmly into position.

2. Coordination: Coordinate and provide required backing and other support for items to be mounted on the finished covering. Coordinate requirements for pipes and other items designed to be housed within the partition and wall systems.

END OF SECTION

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for gypsum drywall where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. ANSI Compliance:** All work shall comply with ANSI 94.1, drawings, and drywall manufacturer specific instructions.
- 6. Fire-resistance ratings:** Where indicated, provide materials and construction which are identical to those of assemblies whose fire resistance rating has been determined per ASTM E 119 by a testing and inspection organization acceptable to authorities having jurisdiction.

Provide fire-resistance rated assemblies identical to those indicated by reference to GA File No.'s in GA "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in listing of other testing and agencies acceptable to authorities having jurisdiction.
- 7. Mock-up Panel for texture:** provide a sample panel of 'light splatter' texture for approval by Owner's Representative before commencing work.

Part 2 Products

- 1. Manufacturers:** Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
Flintkote Products, Genstar Building Materials Co.
Gold Bond Building Products Div., National Gypsum Co.
United States Gypsum Co.
- 2. Gypsum drywall board (fire resistant):** ASTM C 36, except ASTM C 442 permitted for base layers and where finish of exposed faces not indicated; provide boards with long edges tapered for joint treatment. Provide UL labeled "Type X" board, 5/8" thick.
- 3. Drywall sealant:** Non-drying mastic of type recommended by drywall manufacturer, except providing paintable elastic sealant where exposed to view.

4. Drywall trim accessories: Galvanized steel. (note: plastic not accepted) Provide casing bead of beaded-nose flange type, with flange for joint treatment. Provide J-mold, steel casing series 200 at exposed drywall terminations.

5. Drywall fasteners: Provide nails and screws of the type and size recommended by the drywall manufacturer for the types of applications indicated. Comply with ASTM C 646 for screws and ASTM C 514 for nails.

6. Joint treatment materials: ASTM C 475, types recommended by drywall manufacturer. Provide single or double compound treatment system (installer's option).

7. Texturing materials: Gold Bond's 'Wall Spray' or 'Spray-Quick' or approved equal.

Part 3 Execution

1. Project conditions: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations. For nonadhesive attachment of gypsum board to framing, maintain not less than 40 degrees F. For adhesive attachment and finishing of gypsum board maintain not less than 50 degrees F for 40 hours prior to application and continuously thereafter until drying is complete.

2. Partitions/walls: Apply gypsum board horizontally and locate edge joints over supports, but offset at least one stud space on opposite faces of partitions/walls. Use maximum practical length boards; locate end joints over supports and stagger in alternate courses of board. Maximum gypsum board joint shall be 1/8". Gyp board shall extend to a min. of 6" above ceiling height.

3. Metal supports: Fasten gypsum wallboard with screws. Comply with manufacturer's instructions for fastening, but do not exceed 12" o.c. spacing.

4. Surfacing texture: Walls: "light splatter" Ceilings and bulkheads: "smooth"

END OF SECTION

Porcelain Tile ----- 09300

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for tile where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Samples:**
Tile: Submit two sets of samples illustrating color range for selection.
Grout: Cured samples showing available colors.

Part 2 Products

Project should be bid with the following as the floor and wall tile. The tile contractor may submit samples of similar tile to the Architect for consideration (after the bidding process) but should be prepared to furnish the specified tile

- 1. Wall Tile #1:** American Olean Fusion Cotto; 12" x 12", color to be selected
- 2. Wall Tile #2:** American Olean Fusion Cotto; 2" x 4" Brick Joint Mosaic, color to be selected.
- 3. Wall Tile #3:** American Olean Fusion Cotto; 3" x 12" bullnose trim, color to be selected.
- 4. Floor Tile #1:** American Olean Fusion Cotto; 12" x 24", color to be selected, brick joint ½ pattern.
- 2. Grout:** The grout shall be Tec Power Grout (www.tecpowergrout.com) manufactured by HB Fuller Co.
- 3. Crack and Anti-fracture Membrane:** All cracks and expansion joints in the concrete slab shall be properly treated with a crack isolation membrane system applied in a width equal to the size of the ceramic tile.

4. Transition Strips: see list of transition strips in Carpet 09685 section.

Part 3 Execution

1. Preparation: Seal substrate surface cracks with filler. Inspect substrates and ensure surfaces are free of coatings, curing membranes, oil, grease, wax, and dust.

2. Installation: Install per manufacturer's recommendations and instructions. See Drawings for dimensions and field verify existing conditions.

3. Layout: Layout tilework to minimize cuts less than one-half tile in size. Do not interrupt tile pattern through openings.

4. Joints: Align joints to provide straight, uniform grout lines, parallel with walls. Joint width shall be 1/8".

5. Grout tile joints. Make joints watertight, without voids, cracks, excess mortar or excess grout.

6. Grout haze: Remove grout haze following grout manufacturer's recommendations.

7. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes

8. Maintenance Instructions: Include recommended cleaning methods, cleaning materials, and stain removal methods.

9. Job Conditions: Maintain ambient temperatures at not less than 55°F, beginning 24 hours prior to installation of finishing systems, and thereafter to Substantial Completion.

10. Extra Stock: Supply extra stock of 2% in marked cartons.

END OF SECTION

Suspended Tile Ceilings ----- 09510

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for suspended tile ceilings where shown on on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Ceiling Tiles:** (from Room Finish Schedule, Sht. A7)
 - a) 'CEILING-1': 2'x 2': ceiling tile shall be 2' x 2' x 5/8" , "RADAR", as manufactured by USG Interiors, Inc.; Class "A"; edge type: (tegular) SLT'; white. Other pre-approved tile: CertainTeed 'Baroque'.
 - b) 'CEILING-2': 2' x 2' x 1/2" 'Sheetrock Brand Climaplush Lay-In Panel' No. 3270, face laminated gypsum board, square edge, white. Other pre-approved tile: CertainTeed "Vinylrock".
- 2. Suspension system:** Donn DX grid (white) exposed grid system, with exposed bottom flange of white enamel & hold down clips. Tees shall have sufficient strength to carry imposed load and form a 2' x 2' ceiling grid (see Room Finish Schedule) in all areas unless otherwise noted. Other pre-approved suspension system: Chicago Metallic.

Part 3 Execution

- 1. Preparation:** Building shall be examined before beginning work to determine that it is properly enclosed and the structure is in proper condition to receive acoustical materials and/or suspension systems. Area shall be broom-cleaned and uninterrupted for free movement of rolling scaffold. Work not to proceed until unsatisfactory conditions have been corrected.

2. Installation: The system shall be installed to permit border units of the greatest possible size, unless otherwise shown on the Reflected Ceiling Plans. All members shall be aligned for true, level surface and straight lines. Where required, pattern shall be laid out to the approval of the Architect to coordinate with ceiling outlets and fixtures.

3. Cleaning: Following installation, clean soiled or discolored surfaces of units. Remove and replace units which are damaged or improperly installed.

END OF SECTION

Vinyl Base ----- 09650

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for vinyl base where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Vinyl cove base:** 4", 1/8" gauge, vinyl cove wall base, or approved equal.
Approved manufacturers: Johnsonite, Vpi, Armstrong. Color shall be selected by Architect.

Part 3 Execution

- 1. Examination and Preparation**
 - A. Surface conditions:** Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
 - B. Surface preparation:** Immediately prior to installation of the work of this Section, thoroughly clean substrate and remove oil, grease, paint, varnish, hardeners, and other items which would adversely affect the bond of adhesive. Make substrate level and free from irregularities. Assure one constant floor height after flooring is installed, filling low spots and grinding high spots as required.
- 2. Installation (Base):**
 - A.** Apply wall base to walls, columns, pilasters, casework, and other permanent fixtures. Install base in lengths as long as practical.
 - B.** Adhere base tight to wall and floor surfaces.
 - C.** Fit joints tight and vertical. Miter internal corners. At external corners, use premolded units.
 - D.** Place resilient edge strip and reducer strips tightly butted to adjacent flooring and secure with adhesive.
- 4. Cleaning and Protecting:** remove excess adhesive from surfaces without damage.

END OF SECTION

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for hollow metal doors and frames where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. The following carpet(s) specified shall be used as the basis for the bidding. After the general contractor's contract is awarded, the flooring contractor may submit samples of similar carpets to Architect for consideration; but should be prepared to furnish specified carpet.

Part 2 Products

- 1. Carpet #1** (office areas, see Room Finish Schedule): J&J Invision 'Philosophy' style 7016; 24 x 24 modular tile installed in a vertical ashlar pattern. Color to be selected.
- 2. Carpet #2** (Waiting 102, Recept. 103, Conference 115): J&J Invision 'Inception' style 7018 or 7019; 18" x 36" modular tile installed in a herringbone pattern. Color to be selected.
- 3. Carpet #3 Entry** (Airlock 101): J&J Invision Catwalk 7010, color to be selected.
- 4. Intersections of different materials:**
 - a) Intersection of carpet and sealed concrete floor: provide a carpet edge guard equal to Johnsonite EG-XX-H. Color to be selected.
 - b) Intersection of carpet to ceramic: Schluter 'TK' AE satin anodized aluminum
 - c) Intersection of ceramic to concrete: Schluter Reno Ramp – K AE satin anodized aluminum.
- 5. Other materials:** provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

Part 3 Execution

- 1. Examination and Preparation**

- A. **Surface conditions:** Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- B. **Surface preparation:** Immediately prior to installation of the work of this Section, thoroughly clean substrate and remove oil, grease, paint, varnish, hardeners, and other items which would adversely affect the bond of adhesive. Make substrate level and free from irregularities. Assure one constant floor height after carpet is installed, filling low spots and grinding high spots as required.

2. Installation:

- A. Apply carpet in accordance with manufacturer's written instructions.
- B. Verify carpet match before cutting to ensure minimal variation between dye lots.
- C. Lay carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance. Provide monolithic color, pattern, and texture match within any one area.
- D. Do not change run of pile in any room where carpet is continuous through a wall opening into another room. Locate change of color or pattern between rooms under door centerline.
- E. Cut and fit carpet around interruptions.
- F. Fit carpet tight to intersection with vertical surfaces without gaps.
- G. Where wall bases are scheduled, cut carpet tight to walls. Fit carpet tight to vertical interruptions, leaving no gaps.

3. Cleaning: In addition to the cleaning requirements stated elsewhere, thoroughly clean carpet and adjacent surfaces prior to final acceptance of the carpeted areas by the Owner.

4. Protection: Provide a heavy non-staining paper or plastic walkway as required over carpeting in the direction of traffic, maintaining intact until carpeted space is accepted by the Owner.

5. Surplus materials: Provide a min. of 8 sq. yards of carpet tile to owner.

END OF SECTION

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for painting where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval
- 5. Paint color selections:** Submit two (2) color fan charts to Architect for color selection.
- 6. Quality assurance:** Materials shall not be thinned, adulterated, or changed, except as recommended by the manufacturer.
- 7. Protection:** The painting subcontractor shall be responsible for all paint, stains, splatter, etc. on adjacent surfaces, and he shall remove all such stains in a manner satisfactory to the Architect.

Part 2 Products

- 1. Manufacturer:** Sherwin-Williams, or approved equal. Other Pre-Approved Manufacturers:
 - Benjamin Moore
 - Devoe
 - Pratt & Lambert
- 2. Exterior Products:**
 - a. Hollow Metal Doors & Frames, Misc. Metals, Metal Railings:**
 - 1st coat: S-W Kem Kromik Universal Metal Primer
 - 2nd coat: S-W ProClassic Interior Alkyd Semi-Gloss
 - 3rd coat: S-W ProClassic Interior Alkyd Semi-Gloss
- 3. Interior Products:**
 - a. Wall paint for Interior gypsum drywall partitions**
 - 1st Coat: S-W PrepRite 200 Interior Latex Wall Primer
 - 2nd Coat: S-W ProMar 200 Interior Latex Eg-Shel Series
 - 3rd Coat: S-W ProMar 200 Interior Latex Eg-Shel Series

b. Interior cmu walls

- 1st Coat: S-W PrepRite Block Filler
- 2nd Coat: S-W ProMar 200 Latex Semi-Gloss
- 3rd Coat: S-W ProMar 200 Latex Semi-Gloss

c. Interior drywall ceilings & bulkheads

- 1st Coat: S-W PrepRite 200 Interior Latex Wall Primer
- 2nd Coat: S-W ProMar 200 Interior Latex Flat Series
- 3rd Coat: S-W ProMar 200 Interior Latex Flat Series

d. Hollow metal doors and frames:

- 1st coat: S-W Kem Kromik Universal Metal Primer
- 2nd coat: S-W ProClassic Interior Alkyd Semi-Gloss
- 3rd coat: S-W ProClassic Interior Alkyd Semi-Gloss

4. Materials: All painting materials shall be delivered to the job in original unbroken manufacturer's packages with labels intact. All materials shall be the best of their respective kinds and thoroughly mixed in the proper proportions to secure the best results.

Part 3 Execution

1. Application: Follow manufacturer's recommendations and instructions.

2. Preparation: All surfaces shall be thoroughly cleaned and dusted, and all shall be thoroughly dry before succeeding coat is applied. After priming coat has been applied, all nail holes, open joints, and other imperfections shall be solidly and smoothly filled with non-oily wood filler. All painting on interior wood surfaces shall be lightly sandpapered between coats.

END OF SECTION

Epoxy Flooring ----- 09962

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for epoxy flooring where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Warranty:** Submit a one year warranty against defects in material and workmanship upon substantial completion of installation.

Part 2 Products

- 1. Primer:** KB58CQ0033 ArmorSeal 33 WB Epoxy Primer Sealer (Part A and B) 1 Gal Kit clear. Apply per ArmorQuartz system on data page – broadcast colored Quartz to excess.
- 2. Second Coat:** KB58CQ033 ArmorSeal 33 WB Epoxy Primer Sealer (Part A and B) 1 Gal Kit clear. Apply per ArmorQuartz system on data page – broadcast colored Quartz to excess.
- 3. 2 Coats:** KB58VQ650 ArmorSeal 650 SL/RC Self-Leveling Epoxy (Part A and B) 1 Gal Kit Clear. Apply two coats per 'Armor Quartz' system on data page.

Part 3 Execution

- 1. Installation:** per manufacturer's written specifications and instructions

END OF SECTION

Toilet Partitions ----- 10162

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for toilet partitions where shown on on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.
- 5. Work by Others:** grab bars, toilet tissue dispensers

Part 2 Products

- 1. Manufacturers:** The following are pre-approved partition manufacturers:
 - Accurate Partitions
 - American Sanitary Partition Corp.
 - Ampco Products, Inc.
 - Columbia Partitions
 - Flush-Metal Partition
 - General Partitions
 - Global Steel Products Corp.
 - Hadrian Manufacturing
 - Metpar Steel Products Corp.
 - Sanymetal Products Co.
- 2. Materials:** Doors, panels, and pilasters shall be High Density Polyethylene (HDPE) resins, 1" thick panels, solid color throughout.
- 3. Construction:**
 - a) Doors, panels, and pilasters shall be 1" thick with uniformly machined edges
 - b) Doors and panels shall be 55" high and mounted at 14" a.f.f.
 - c) Doors and panels to have an extruded aluminum heat sink strip attached to the lower edge.
 - d) Pilaster shall be 81 ½" high finished height. Pilasters shall include a mounting system comprised of a one piece 304 stainless steel with #4 finish 3" high shoe with an integral plate in the bottom.

e) Pilasters are overhead braced with an extruded anti-grip aluminum headrail

4. Hardware:

a) door hardware shall be heavy-duty diecast (vault) zamac hinge with gravity-acting cams and fabricated from a die cast aluminum alloy. Hinges to be easily adjusted at the jobsite to a full close or partially open position as required.

b) Panel and pilaster brackets: aluminum stirrup brackets shall be 2" long made of heavy-duty anodized extruded aluminum. Stirrup brackets shall be 1/8" thick and mounted with stainless steel, vandal-resistant screws.

c) Pilaster shoes: one piece design and integral to the mounting system and formed from #304 stainless steel 3" high with a #4 satin finish. Pilaster shoes are anchored to the pilaster with #10 stainless steel, vandal-resistant screws.

d) Headrail: heavy-duty anodized extruded aluminum.

Part 3 Execution

1. Preparation: Examine areas to receive toilet compartments for correct height and spacing of anchorage/blocking. Take complete and accurate measurements of toilet compartment locations. Start of work constitutes acceptance of job.

2. Installation: install compartments in a rigid, straight, plumb and level manner. All doors and panels to be mounted at 14" above the finished floor. Clearance at vertical edges of door shall be uniform top to bottom. No evidence of cutting, drilling, and/or patching shall be visible on the finished work. Finished surfaces shall be cleaned after installation and be left free of all imperfections.

3. Warranty: manufacturer shall guarantee its plastic against breakage, corrosion and delamination for 15 years from the date of receipt by the customer. If materials are found defective during that period for the reasons listed above, the materials will be replaced free of charge. No credits or allowances will be issued for any labor or expenses relating to the replacement of components covered under the warranty plan.

END OF SECTION

Signage ----- 10435

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for signage where shown on on the Drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval
- 5. Work not in contract:** All signage (exterior and interior, including restroom signage, other than HC parking sign noted below.

Part 2 Products

- 1. HC Parking signs:** 12" x 18", 18 ga. bonderized steel (or aluminum) screen printed sign. Sign shall be blue with white symbol. Symbol shall be ADA wheelchair symbol, and sign shall be per current ADA requirements. Provide h-channel or u- channel mounting posts (galvanized, or green painted).

Part 3 Execution

See civil engineering drawings. Install per ADA requirements & manufacturer's written recommendations.

END OF SECTION

Fire Extinguishers & Cabinets ----- 10520

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for fire extinguishers, cabinets if required and brackets.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Fire Extinguishers:** multi-purpose dry chemical ABC:
 - Larsen's ABC 10
 - JL Industries 'Cosmic FE10C'
 - Or approved equal
- 2. Fire Extinguisher Cabinets:** non-rated, full glass; clear acrylic glazing, rolled edge, semi-recessed; white baked enamel finish.
 - Larsen's Architectural Series 2409-6R, or approved equal
 - JL Industries Ambassador Series, C1017F10
 - Or approved equal
- 3. Fire Extinguisher Bracket:** chrome strap
 - Larsen's standard bracket
 - JL Industries MB846C
 - Or approved equal

Part 3 Execution

- 1. Installation:** Install the items of this Section in strict accordance with the original design, approved shop drawings, and requirements of agencies having jurisdiction, as approved by the Architect, anchoring all components firmly into position.
- 2. Mounting Height:** The NFPA guidelines state that the distance from the floor to the top of the fire cabinet to be no more than fifty four inches (54").

ADA Guidelines specify **reach ranges** for building occupants who require access to equipment such as fire extinguishers and other fire safety devices.

For an unobstructed approach, the maximum forward reach to this equipment (for example, the fire extinguisher handle) is 48" above the floor. The maximum side reach for such an approach is 54". The actual mounting heights for cabinets housing this equipment can be determined by reviewing the exact dimensions of the specified cabinet and the positioning of the fire equipment within that cabinet.

End of Section

Operable Partitions ----- 10650

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for operable partitions where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

2.01 ACCEPTABLE MANUFACTURERS: Upon compliance with all of the criteria specified in this section, Manufacturers wishing to bid products equal to the product specified must submit to the architect 10 days prior to bidding complete data in support of compliance and a list of three past installations of products similar to those listed. The submitting manufacturer guarantees the proposed substituted product complies with the performance items specified and as detailed on the drawings.

2.02 MATERIALS

Product to be top supported Series 632 paired panels as manufactured by Hufcor Inc.

1. Panels shall be nominally 3" [76] thick, to 48" [1219] in width, and hinged in pairs.
2. Panel faces: 47 STC with steel faces w/ heavy duty wall vinyl covering.
3. Frames shall be of 16 gauge painted steel with integral factory applied aluminum vertical edge and face protection.
4. Vertical sound seals shall be of tongue and groove configuration, ensure panel-to-panel alignment and prevent sound leaks between panels.
5. Horizontal top seals shall be fixed continuous contact dual 4-finger vinyl.
6. Horizontal bottom seals shall be retractable, provide up to 2" [50] nominal operating clearance, and exert downward force when extended.
7. Horizontal trim shall be of aluminum.

8. Low profile hinges on basic panels shall be of steel and project no more than 1/4" [6] beyond panel faces. Each pair of panels to have a minimum of three hinges.

B. Weight of the panels shall be 5.7-10.2 lbs. per sq. ft. [27.8-49.8kg/sq.m] based on options selected.

C. Suspension system:

1. Track shall be of clear anodized architectural grade extruded aluminum alloy 6063-T6. Track design shall provide precise alignment at the trolley running surfaces and provide integral support for adjoining ceiling, soffit, or plenum sound barrier. Track shall be connected to the structural support by pairs of minimum 3/8" [10] dia. threaded steel hanger rods. Guide rails and/or track sweep seals shall not be required.
 - a. Each panel shall be supported by one 4-wheeled carrier. Wheels to be of hardened steel ball bearings encased with molded polymer tires.
2. Plenum closure (by others): Design of plenum closure must permit lifting out of header panels to adjust track height. Plenum closure required for optimum sound control of partition.

D. Finishes

1.Face finish shall be: Factory applied reinforced vinyl fabric with woven backing, weighing not less than 15 oz. per lineal yard [465 g/m]. Color shall be selected from manufacturer's standard color selectors.

2.Exposed metal trim and seal color shall be as selected by architect from standard finishes

Part 3 Execution

A. Panels shall be manually moved from the storage area, positioned in the opening, and seals set.

B. Retractable Horizontal Seals

1. Retractable horizontal seals shall be activated by a removable quick-set operating handle located approximately 42" [1067] from the floor in the panel edge.
2. All retractable seals in each hinged pair shall be operated simultaneously.
3. Seal activation requires approximately 15 lbs. [6.8 kg] of force per panel and approximately a 190 degree turn of the removable handle.

C. Automatic Floor Seals

1. Horizontal seals shall be activated by pressing the edge of the panel into the edge of the adjacent panel or wall.
2. Seal activation requires approximately 15 lbs. [6.8 kg] of force per panel.

D. Final partition closure to be by (select one):

1. Lever closure panel with expanding jamb which compensates for minor wall irregularities and provides a minimum of 250 lbs. [113.4kg] seal force

against the adjacent wall for optimum sound control. The jamb activator shall be located approximately 45" [1143] from the floor in the panel face and be accessed from either side of the panel. The jamb is equipped with a mechanical rack and pinion gear drive mechanism and shall extend 4"-6" [100-152] by turning the removable operating handle.

END OF SECTION

Toilet Accessories ----- 10800

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for toilet accessories.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Toilet tissue:** Bradley model # 5084, or approved equal; non-controlled delivery, heavy gauge type 304 stainless steel with satin finish. Holds one standard core roll through 5" in diameter.
- 2. Grab bars:** Shall be 1 1/4" diameter, stainless steel; 1 1/2"; safety clearance feature. Layout shall be according to details on plans.
- 3. Mirrors:** See Drawings for sizes. 1/4" thick; seaming edge
- 4. Purse Shelf:** Bradley 7510 Surface mounted stainless steel shelf. Stainless steel support brackets welded to shelf. Satin finish. Size: 24" length x 10" deep. Shelf located in Manufacturing Women's Restroom, none required at Office Women's Restroom.
- 4. Paper towel dispensers, soap dispensers, napkin disposal units:** shall be furnished by Owner, installed by contractor at Owner's option.
- 6. Other Pre-Approved Manufacturers:**
 - American Specialties
 - Bobrick

Part 3 Execution

- 1. Installation:** Assemble fixtures and associated fittings and trim in accordance with manufacturer's instructions. Install supports attached to building structure for equipment requiring supports.

2. Grab Bars: Install grab bars to withstand downward force of not less than 250 lbf (1112 N) per ASTM F 446.

3. Installation: Install equipment level, plumb, and firmly in place in accordance with manufacturer's rough-in drawings.

4. Cleaning and Protection: Repair or replace defective work, including damaged equipment and components. Clean unit surfaces, and leave in ready-to-use condition. Turn over keys, tools, maintenance instructions, and maintenance stock to Owner.

5. Testing and Adjustment: Test each piece of equipment provided with moving parts to assure proper operation, freedom of movement, and alignment. Install new batteries in battery-powered items. Repair or replace malfunctioning equipment, or equipment with parts that bind or are misaligned.

END OF SECTION

Loading Dock Equipment ----- 11600

Part 1 General

- 1. Related documents:** The provisions of the General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this section.
- 2. Work included:** In general, this includes, but is not limited to providing all labor, materials, and equipment for loading dock equipment where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- 3. Shop Drawings and Product Data:** Submit in accordance with Section 01330 'Submittal Procedure'.
- 4. Substitutions:** Other manufacturers will be considered. Supply specifications sheet to Architect for approval.

Part 2 Products

- 1. Dock Levelers:** Rite-Hite RHH-4000 Series;
Nominal leveler size: 8' length, 7' width
Pit Dimensions: 87" length, 85" width, 19.5" depth (verify with manufacturer's info.)
Capacity: 'D'

Part 3 Execution

- 1. Installation:** Install per manufacturer's written instructions.

END OF SECTION

Pre-Engineered Steel Building -----13200

Part 1 General

1. Related documents: The provisions of the General and Supplementary Conditions and General Requirements apply to the work specified in this section.

2. References: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

- A. AAMA 101 - Voluntary Specification for Aluminum and Poly (Vinyl Chloride) (PVC) Prime Windows and Glass Doors; American Architectural Manufacturers Association.
- B. ASTM A 36/ASTM A36M - Standard Specification for Carbon Structural Steel.
- C. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- D. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- E. ASTM A 500 - Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- F. ASTM A 529/A 529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
- G. ASTM A 572/A 572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steel.
- H. ASTM A 607 - Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Columbium or Vanadium, or Both, Hot-Rolled and Cold-Rolled.
- I. ASTM A 653/A 653M - Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- J. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- K. ASTM A 1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low Alloy with Improved Formability.

- L. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- M. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.
- N. ASTM D 2843 - Standard Test Method for Smoke from the Burning or Decomposition of Plastics.
- O. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- P. ASTM E 774 - Standard Specification for Sealed Insulating Glass Units.
- Q. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
- R. AWS D1.1 - Structural Welding Code; American Welding Society.
- S. NAIMA 202 - Standard for Flexible Fiber Glass Insulation Used in Metal Buildings; North American Insulation Manufacturers Association.
- T. SDI 100 - Recommended Specifications for Standard Steel Doors and Frames; Steel Door Institute.
- U. UL 580 - Tests For Wind Uplift Resistance of Roof Assemblies; Underwriters Laboratories Inc.
- V. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.

3. Shop Drawings and Product Data: Submit in accordance with Section 01330 'Submittal Procedure'.

- A. **Product Data:** Submit manufacturer's product information, specifications, and installation instructions for building components, accessories. Submit two (2) copies.
- B. **Certification:** Submit written letter of certification prepared and signed by a Professional Engineer, registered to practice in Missouri verifying that the metal building system design and metal roof system design (including panels, clips, and support system components) meet indicated loading requirements and codes of authorities having jurisdiction. The certification must reference specific dead, live, snow, wind loads/speeds (including edge zone wind pressures), tributary area load reductions (if applicable), concentrated loads, collateral loads, seismic loads, end use categories, governing code bodies (including year), and load applications..

Submit two (2) copies.

C. Erection & Anchor Bolt Installation Drawings: Submit complete erection drawings showing roof framing, transverse cross sections, covering and trim details, and accessory installation details to clearly indicate proper assembly of building components. Submit electronically in .pdf format. Submit a min. of two (2) copies of color selection charts.

D. Review of Shop Drawings: Incomplete "Approval Drawings" will not be reviewed by the Architect or the Engineer-of-Record. All shop drawings and calculations submitted for approval shall be 100% complete, including all details, and shall be signed and sealed by the Metal Building Engineer.

4. Warranty: Manufacturer shall warranty installed system for the periods described herein, starting from Date of Substantial Completion against all the conditions indicated below. When notified in writing from Owner, manufacturer/installer shall, promptly and without inconvenience and cost to Owner, correct said deficiencies.

1. **Materials and Workmanship Warranty:** 1 year. Provide building manufacturer's warranty guaranteeing the building system against defects in material for one year from the date of acceptance and shall provide for replacement material as required within that time period.
2. **Finish Warranty:**
 - a. Finish coating shall not peel, blister, chip, crack or check in finish, and shall not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D659.
 - b. Finish coating shall not change color or fade in excess of 5 NBS units as determined by ASTM D2244. Panel finish: 20 years.
3. **Performance Warranty:** Furnish written warranty, stating sheet metal roofing system and flashing under this Section will be maintained in watertight condition and defects resulting from the following items will be corrected without cost to Owner for a period of 20 years.
 - a. Faulty workmanship.
 - b. Defective materials including sealants and fasteners.
 - c. Water infiltration.

5. Quality Assurance:

A. Manufacturer Qualifications: Not less than 5 years experience in the actual production of specified products.

1. Member of the Metal Building Manufacturer's Association (MBMA).
2. Primary manufacturer of frames, secondary steel, roof and wall sheeting, and trim.

B. Installer Qualifications - Firm experienced in application or installation of systems similar in complexity to those required for this project, plus the following:

1. Certified by manufacturer.
2. 3 years experience with systems.
3. Successfully completed not less than 5 comparable scale projects using this system.

6. Governing design code: Structural design for the building structural system will be provided by the building manufacturer for the design criteria indicated on the Drawings.

Part 2 Products

1. Building: The Building System includes the structural steel system primary and secondary, metal roof system, wall system, and all roof and wall insulation, canopies, trim and accessories as required by the drawings.

2. Building manufacturer: Subject to compliance with all requirements manufacturers offering building systems which may be incorporated in the work include, but are not limited to the following:

- Alliance Steel, Inc.
- American Buildings Company
- Butler Manufacturing Company
- Ceco Building Systems
- Kirby Building Systems
- United Structures of America, Inc.
- VP Buildings, Memphis TN

3. Building description: Building Sizes: The building sizes will be defined as follows.

Building Width: Measured from outside to outside of sidewall girts.

Building Length: Measured from outside to outside of endwall girts.

Building Line: Outside face of structural steel

See Drawings for sizes.

4. Component markings: All components and parts of the structural system shall be as indicated on the drawings and/or specifications. All components and parts shall be clearly marked and erection drawings shall be supplied for identification and assembly of the parts. Field modification of parts shall be in accordance with the best standard procedures, require the approval of the manufacturer, and shall be the responsibility of the building erector.

5. Foundations & anchor bolts: Foundations including anchor bolt embedment length shall be adequately designed by a competent engineer, retained by other than the building manufacturer, in accordance with the best recommended practices for the specific soil conditions of the building site. Reactions for the proper design of foundations shall be supplied by the building manufacturer. Anchor bolt diameter shall be as specified by building manufacturer's standard anchor bolt layout drawings. Anchor bolts shall be supplied by the contractor, not the building manufacturer.

Unless otherwise noted on the drawings, all columns shall be designed using pinned base.

6. Structural steel design: All structural mill sections or welded-up plate sections shall be designed in accordance with the 1989 AISC 9th edition, or 2005 AISC 13th edition Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", and all cold-formed steel structural members shall be designed in accordance with the latest edition AISI "North American Specification for the Design of Cold-Formed Steel Structural Members." The structural system will be designed in accordance with a specified building code. See Governing Design Code section above.

7. Primary framing, rigid frames: Frames shall consist of welded-up plate section columns and roof beams complete with necessary splice plates for bolted field assembly. All base plates, cap plates, compression splice plates and stiffener plates shall be factory welded into place and have the connection holes shop fabricated. Columns and roof beams shall be fabricated complete with holes in webs and flanges for the attachment of secondary structural members and bracing except for field work as noted on manufacturer's erection drawings. All bolts for field assembly of frame members shall be high strength bolts as indicated on erection drawings.

8. Endwall structurals: The endwall structurals shall be cold-formed channel members designed in accordance with the the latest edition AISI "North American Specification for the Design of Cold-Formed Steel Structural Members", or welded-up plate sections designed in accordance with the 2005 AISC 13th edition Specification for the Design, Fabrication and Erection of Structural Steel for Buildings". Endwall frames shall consist of endwall corner posts, endwall roof beams and endwall posts as required by design criteria. All splice plates and base clips shall be shop fabricated complete with bolt connection holes. All base plates, cap plates, compression splice plates and stiffener plates shall be factory welded into place and have the connection holes shop fabricated.

9. Beams and posts: shop fabricated complete with holes for the attachment of secondary structural members except for field work as noted on manufacturer's erection drawings.

10. Intermediate frames: shall be substituted for endwall roof beams when specified. Necessary endwall posts and holes for connection to the intermediate frame used in the endwall shall be shop fabricated.

11. Purlins and girts:

A. **Purlins:** Zee-shaped; depth as required; with minimum yield strength of 55,000 psi (345 MPa); simple span or continuous span as required for design.

B. **Girts:** Zee- or Cee-shaped; depth as required, with minimum yield strength of 55,000 psi (345 MPa); simple span or continuous span as required for design.

12. Bracing: Wind Bracing: Portal, torsional, diagonal bracing or diaphragm in accordance with manufacturer's standard design practices; utilizing rods, angles, and other members, with minimum yield strengths as required for design. See Drawings for window and door openings.

13. Welding: Welding procedure and operator qualifications and welding quality standards shall be in accordance with the American Welding Society structural welding code. Certification of welder qualification shall be supplied when requested.

14. Structural painting: All structural steel shall be prime painted as temporary protection against ordinary atmospheric conditions. Subsequent finish, painting, if required, shall be performed in the field by others. Prior to painting all steel shall be cleaned of loose rust, loose mill scale, dirt and other foreign material. Unless otherwise specified, the fabricator shall not sand blast, flame clean or pickle prior to painting. Factory cover all steel with one coat of Gray (at owner's request) oxide primer paint formulated to equal or exceed the performance requirements of Federal Specification SSPC 15. Primary Frames: Clean all steel per SSPC-SP2. Apply one coat of water reducible alkyd primer by spray or dip method to a minimum coating thickness of 1.0 mil. Secondary Structurals: Clean all steel per SSPC-SP8. Apply one coat of coil applied polyester primer to a minimum coating thickness of 0.5 mil. (purlins and girts).

15. Roof Panels: Standing seam roof panels, 24" wide net coverage, with 3" high major ribs formed at the panel side laps, formed for field seaming using electrically operated seaming machine.

- Side joints: factory applied sealant for field seaming.
- Material: Galvalume steel, 24 gage.
- Side laps: two factory-formed interlocking ribs, with one weather sealed joint, field-seamed into place to form a double-fold 360 degree seam.
- Length: continuous from eave to ridge up to 41 feet in length.

Panels of maximum possible lengths shall be used to minimize endlaps, eave panels shall extend beyond the structural line of the sidewall. Panels shall be factory prepunched at panel end to match prepunched holes in the eave structural member. Panel end splices shall be factory prepunched and prenotched. Panel end splices shall be floating and allow the roof panels to expand and contract with roof panel temperature changes.

Ridge assembly shall be designed to allow roof panels to move lengthwise with expansion/contraction as the roof panel temperature changes. Parts shall be factory prepunched for correct field assembly. Panel closures and interior reinforcing straps shall be installed to seal the panel ends at the ridge. The attachment fasteners shall not be exposed on the weather side. A lockseam plug shall be used to seal the lockseam portion of the panel. A hi-tensile steel ridge cover shall span from panel closure to panel closure and flex as the roof system expands and contracts.

16. Wall Panel description: Panels shall be 3' wide with four major corrugations, 1-1/2" high 12" on center with two minor corrugations between each of the major corrugations the entire length of the panel. Panels shall be one piece from base to building eave.

17. Wall panel design: shall be in accordance with the latest edition AISI "North American Specification for the Design of Cold-Formed Steel Structural Members", and in accordance with sound engineering methods and practices.

18. Wall panel material and finish: Manufacturer's standard color finish with 10 year warranty. Color to be selected.

19. Accessories, general notes: Accessories shall be as standard with building manufacturer, unless otherwise noted and furnished as specified. The metal coating on all gutters, downspouts, gable trim and eave trim to be manufacturer's standard color finish (color to be selected). Location of standard accessories shall be as shown on erection drawings as furnished by building manufacturer.

Material used in flashing and transition parts and furnished as standard by building manufacturer and may or may not match the roof panel material. Parts shall be compatible and shall not cause a corrosive condition. Copper and lead materials shall not be used with Galvalume(R) or optional aluminum coated panels.

20. Trim material: Exterior trim shall be of the same finish as the exterior color of the wall panel except the following: All gutters, downspouts, eave trim, gable trim, door side flashings to be prepainted manufacturer's standard finish. All gutters, downspouts, eave trim and gable trim shall colors shall be selected. All flashings, trims, closures and similar items shall be as detailed on drawings as supplied by the manufacturer of the panel.

21. Interior Columns of Office addition: square, rectangle, o "I" shaped – not round.

Part 3 Installation

1. Roof system installation: All roof panel clips shall be positioned by matching the hole in the clip with the prepunched holes in the secondary structural members. All roof panels shall be positioned and properly aligned by matching the prepunched holes in the panel end with the prepunched holes in the eave structural member and by aligning the panel with the panel clip.

Roof panel sidelaps shall be field seamed by a self-propelled and portable electrical lock seaming machine. The machine field forms the final 180 degrees of a 360 degree Pittsburgh double lock standing seam; all sidelaps sealant shall be factory applied.

Roof panel endlaps, when required, shall be at least 6", sealed with sealants and fastened together by clamping plates. Sealants shall contain hard nylon beads which prevent mastic from flowing out due to clamping actions. The panel laps shall be joined by means of a two piece clamped connection consisting of a bottom reinforcing plate and a top

panel strap. The panel endlaps shall be located directly over, but not fastened to, a supporting secondary roof structural member and be staggered, so as to avoid a four panel lap splice condition.

2. Roof system fasteners: All connections of roof panels to structural members, except at eave, shall be made with clips with movable tabs that are seamed into the standing seam sidelap.

Roof panel-to-panel connections shall be made with a positive, field formed standing double-lock seam, formed by a special seaming machine. The machine field forms the final 180 degrees of a 360 degree Pittsburgh double-lock standing seam; all sidelap sealant shall be factory applied.

Fasteners penetrating the metal membrane at the following locations must not exceed the frequency listed.

In lieu of prepunched secondaries and panels, pre-drilling of the structural members is mandatory in order to maintain proper alignment of the roof system.

3. Wall panel application: Structural system shall be plumb before wall panels are attached. Panels shall be aligned and attached in accordance with manufacturer's erection drawings. All sidelaps shall be at least one full corrugation. Panels shall be sealed at the base with metal closures.

4. Wall panel fasteners: Wall panel-to-structural connections shall be made with Torx head Scrubolt fasteners, Torx head self-drilling screws or Lock-Rivet fasteners. Panel-to-panel connections shall be made with Torx head self-drilling screws, or Lock-Rivet fasteners. Fastener locations shall be as shown on erection drawings as furnished by manufacturer. All exposed fasteners shall be either prepainted to match wall color or shall be covered with plastic color caps to match wall color.

END OF SECTION