

RESOLUTION RECEIVING PROPOSALS, AWARDING AND APPROVING CONTRACT WITH R.L. JACKSON CONSTRUCTION LLC FOR THE ASHTABULA COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES-NEW OFFICE BUILDING

WHEREAS, on April 28, 2026 by Resolution No. 2026-203, proposals were ordered and on May 22, 2026 at 3:00 p.m., proposals were received for the Ashtabula County Department of Environmental Services-New Office Building, to wit:

Bidder Name	Bid Security	Addendum 1 & 2 Received	Informal Base Bid	Alternate #1	Alternate #2
Vendrick Construction	X	X	\$1,684,700.00	\$497,800.00	\$40,000.00
Lakeland Construction	X	X	\$1,579,000.00	\$388,000.00	\$42,000.00
Brock & Associates	X	X	\$1,990,000.00	\$587,000.00	\$54,500.00
B&B Construction	X	X	\$1,608,000.00	\$479,000.00	\$41,000.00
Town Center Construction	X	X	\$1,714,800.00	\$520,700.00	\$41,000.00
Marous Brothers	X	X	\$1,592,562.00	\$577,616.00	\$48,990.00
R. L. Jackson	X	X	\$1,433,000.00	\$445,800.00	\$43,000.00
Declan Construction	X	X	\$1,585,690.00	\$450,000.00	\$44,000.00
United Contractors Inc	X	X	\$1,956,000.00	\$593,000.00	\$48,000.00

WHEREAS, the proposals were evaluated and a recommendation has been made to award the proposal to R.L. Jackson Construction LLC, 4671 State Route 167 W, Pierpont, OH 44082, as the best and lowest bidder; and

WHEREAS, after review and consideration, this Board of Commissioners would concur with this recommendation to award to R.L. Jackson Construction LLC for the Ashtabula County Department of Environmental Services-New Office Building for the Base Bid, Alternate #1 and Alternate #2 for a total \$1,921,000.00; and

WHEREAS, a contract has been presented with R.L. Jackson Construction LLC, as follows:

Party: R.L. Jackson Construction LLC, 4671 State Route 167 W, Pierpont, OH 44082

Scope: The construction of a 5,000 square foot office building as well as a new attached storage and connector building in Jefferson, Ohio.

Term: The Contractor agrees that the work will be substantially complete within 180 Calendar Days of the effective date of the agreement and complete within 210 Calendar Days after the date when the Contract Time commences to run.

Cost: \$1,921,000.00; now

THEREFORE, BE IT RESOLVED, By the Board of Commissioners of Ashtabula County, Ohio that the proposals be received and awarded to and a contract approved with R. L. Jackson Construction LLC in accordance with the copy now on file in this office.

**ASHTABULA COUNTY COMMISSIONERS
CERTIFICATION PAGE**

Resolution No. 2026-257

June 09, 2026

**RESOLUTION RECEIVING PROPOSALS, AWARDING AND APPROVING
CONTRACT WITH R.L. JACKSON CONSTRUCTION LLC FOR THE ASHTABULA
COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES-NEW OFFICE
BUILDING**

Upon the motion of J.P. Ducro IV, seconded by Casey R. Kozlowski.

VOTE:

Casey R. Kozlowski
Kathryn L. Whittington
J.P. Ducro IV

Aye
Abstain
Aye

CERTIFICATE OF CLERK

IT IS HEREBY CERTIFIED that the foregoing is a true and correct transcript of a resolution acted upon and duly passed by the Board of County Commissioners of Ashtabula County, Ohio, on the date noted above.



Crystal Sturgill, Clerk of the Board
Board of County Commissioners
Ashtabula County, Ohio

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***All Bidding Forms must be completed and submitted with Bid.**



Bidding Requirements

NOTICE TO BIDDERS

Sealed bids will be received by the Board of County Commissioners for Ashtabula County, Ohio ("COUNTY") c/o Lisa Hawkins, Clerk, 2nd Floor, Old Courthouse, 25 West Jefferson St., Jefferson, Ohio 44047; until 3:00 p.m. EST on May 22, 2026, and publicly opened thereafter in the Commissioners' Conference Room at the above address for:

Ashtabula County Department of Environmental Services- New Office Building

located at 152 East Erie St., Jefferson, OH 44047

Project Opinion of Probable Cost: \$1,700,000.00 (Base Bid)

The project includes all labor, equipment, and materials to construct a new wood framed office building per the plans and specifications, including site work, foundation, concrete flatwork, framing, finishes, mechanical, electrical, and plumbing trades. Work must be substantially complete 180 calendar days after the issuance of the notice to proceed.

This legal notice may be accessed at: www.ashtabulacounty.us/bids. The bid documents will be available at Roller Reprographic Services, 11907 Market Street, North Lima, Ohio, 330-549-0377, www.rollerreprographics.com, where bidders may access their on-line plan room or purchase printed sets at the actual cost being charged by the printer per each set.

No electronic submissions will be accepted. Fully completed Bid Forms must be sealed, enclosed and addressed to the Board of Ashtabula County Commissioners, Attn: Lisa Hawkins, Clerk, at the above address, and clearly marked **Ashtabula County Department of Environmental Services- New Office Building**.

A pre-bid meeting will be held on Wednesday, May 13, 2026 at 5:00 p.m. at the current office of the Ashtabula County Department of Environmental Services, Conference Room, 36 West Walnut St., Jefferson, OH 44047. Bidders may attend to hear project details and scope. Bid documents will be reviewed at this meeting.

All questions must be emailed to Dennis Bowman at dennis@fbengineeringinc.com, by 12:00 p.m. EST on Friday, May 15, 2026; responses will be issued no less than 3 days prior to the bid deadline.

Each bid must be in strict compliance with all the Instructions to Bidders to be considered for contract award.

Each bid must comply with all Instructions to Bidders and include, per ORC 153.54, a bid bond for 100% of the bid amount **or** a certified check, cashier's check, or irrevocable letter of credit equal to 10% of the bid. Security will be returned upon contract execution or bid rejection.

Bids may be held for up to sixty (60) days after opening. The County reserves the right to reject any or all bids, waive informalities and to disregard all non-conforming, nonresponsive or conditional bids, or to increase or decrease or omit any item or items.

Prevailing wage requirements apply to this project.

By order of the Board of Commissioners of Ashtabula County, Ohio: Casey Kozlowski, Kathryn Whittington J. P. Ducro IV.

Lisa Hawkins, Ashtabula County Clerk of the Board

Publish: Star Beacon-April 30, 2026

INSTRUCTION TO BIDDERS

PART 1 – DEFINED TERMS

- 1.1 Terms used in these Instructions to Bidder have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meaning indicated below:
- A. **Bidder or Contractor** – The corporation, partnership, or individual proposing or under Contract to furnish service, material, labor, and/or equipment listed in the Bid Documents.
 - B. **Calendar Day** – Every day shown on the calendar.
 - C. **Issuing Office** – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
 - D. **Successful Bidder** – the lowest, responsible, and responsive Bidder to whom Owner makes an award.

PART 2 – COPIES OF BIDDING DOCUMENTS

- 2.1 Complete sets of the Bidding Documents shall be obtained as stated in the Legal Notice or Invitation to Bid.
- 2.2 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.3 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.1 To demonstrate Bidder's qualifications to perform the Work, each Bidder must be prepared to submit within five (5) days of the Bid opening upon Owner's request written evidence such as financial data, present commitments, and other data as may be called for below or in the Supplementary Conditions.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS AND SITE

- 4.1 It is the responsibility of each Bidder before submitting a bid to:
 - A. Examine thoroughly the Contract Documents and other related data identified in the Bidding Documents;
 - B. Visit the site to become familiar with and satisfy Bidder as to the general, local, and site conditions that may affect cost, progress, performance, or furnishing of the Work;
 - C. Consider federal, state, and local Laws and Regulations that may affect cost, progress, performance, or furnishing of Work;



- D. Promptly notify Engineer of all conflicts, errors, ambiguities, or discrepancies which Bidder has discovered in or between the Contract Documents and such other related documents and/or site conditions.
- 4.2 Information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based upon information and data furnished to the Owner and Engineer by owners of such underground facilities or others, and Owner and Engineer do not assume any responsibility for the accuracy or completeness thereof unless it is expressly provided in the Supplementary Conditions.
- 4.3 Provisions concerning responsibility for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and underground facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in the General Conditions.

ARTICLE 5 – SITE AND OTHER AREAS

- 5.1 The lands upon which the Work is to be performed, right-of-way, easements for access thereto, and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.

ARTICLE 6 - INTERPRETATIONS AND ADDENDA

- 6.1 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda to all parties recorded by Engineer as having received Bidding Documents. Questions received less than five days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 6.2 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 7 – BID SECURITY

- 7.1 Each bid must be accompanied by Bid security made payable to the Owner in form of a certified or cashier's check in the amount of 10% of the amount Bid or an original Bid bond in the amount of 100% of amount bid per ORC 153.54 and 153.571. The certified or cashier's check shall be from a financial institution authorized to transact business in the State of Ohio and acceptable to the Owner.
- 7.2 If for any reason the Successful Bidder should fail or refuse to enter into a Contract within 15 days of the Notice of Award, the Bid security shall be forfeited to the Owner, not as penalty, but as liquidated damages.

ARTICLE 8 - CONTRACT TIMES

- 8.1 The times for Substantial Completion and readiness for final payment is set forth in the Agreement (or incorporated therein by referencing to the attached Bid Form).

ARTICLE 9 – LIQUIDATED DAMAGES

- 9.1 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 10 – SUBSTITUTE AND “OR EQUAL” ITEMS

- 10.1 The Contract, if awarded, will be on the basis of materials, methods, and equipment specified or described in the Bidding Documents with consideration of possible substitute or “or equal” items. Contract shall be permitted to provide an approved “or equal” only after being approved an “or equal” by the Engineer. Whenever it is specified or described in the Bidding Documents that a substitute or “or equal” item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will be considered by Engineer when a request for a substitution is made in advance. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in the General Conditions and may be supplemented in the Specifications.

ARTICLE 11 – SUBCONTRACTORS

- 11.1 The Bidder shall state on the appropriate Contract Form the names of all Subcontractors proposed and the items of work they are to be assigned. All work not assigned to a Subcontractor shall be assumed by the Owner to be performed by the Bidder.
- 11.2 The Owner reserves the right to approve all Subcontractors proposed by the Bidder. If the Owner, after due investigation, rejects the use of a proposed Subcontractor, the apparent successful Bidder may either submit an acceptable substitution without increase in bid price or decline substitution and withdraw his bid without sacrificing his bid security. Any listed Subcontractors to whom the Owner does make written objection prior to the Notice of Award, shall be deemed acceptable to the Owner.
- 11.3 No Contractor shall be required to employ any Subcontractor, person, or organization against whom he has reasonable objection.

ARTICLE 12 – BID FORM

- 12.1 The Bid Form is included with the Bidding Forms and all blanks shall be completed by printing in ink or by typewriter and the Bid signed in ink. All names must be typed or printed below the signature. Erasures or alterations shall be initialed in ink by the person signing the Bid Form.
- 12.2 Bids by a corporation shall be executed in the corporate name by the president or a vice-president, or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- 12.3 Bids by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be below the signature.
- 12.4 The Bid shall contain an acknowledgement of receipt of all Addenda.



ARTICLE 13 – SUBMITTAL OF BID

- 13.1 Bids shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked with the Project title, the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED."
- 13.2 All Bidding Forms are to be completed and submitted along with the Bid.

ARTICLE 14 – MODIFICATIONS AND WITHDRAW OF BID

- 14.1 If a Bidder wishes to withdraw his bid prior to the opening of Bids, he shall state his purpose in writing to the Owner before the time fixed for opening, and when reached it shall be handed to him unread.
- 14.2 After the opening of bids, no Bidder may withdraw his bid for a period of 60 days.

ARTICLE 15 – OPENING OF BIDS

- 15.1 Bids will be opened at the time and place indicated in the Legal Advertisement or Invitation to Bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available.

ARTICLE 16 – BIDS REMAIN SUBJECT TO ACCEPTANCE

- 16.1 All bids will remain subject to acceptance for 60 days after the Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to that date. Should there be any reason why the Contract cannot be awarded within the specified period; the time may be extended in writing by mutual agreement between the Owner and Bidder. If the Contract is to be awarded, Owner will give successful Bidder a Notice of Award within 30 days after the date of the Bid unless the time is extended by mutual agreement between the Owner and Bidder.

ARTICLE 17 – BASIS AND METHOD FOR AWARD OF CONTRACT

- 17.1 Owner reserves the right to reject and all Bids, to waive any and all informalities and to negotiate contract terms and with the Successful Bidder, and the right to disregard all nonconforming, nonresponsive or conditional Bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any Column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 17.2 In evaluating Bids, Owners shall consider the qualifications of the Bidder, whether or not the Bids comply with the prescribed requirements and alternates and unit prices if requested in the Bid Forms. The Owner intends to accept alternates (if any are accepted) in the order in which they are listed in the Bid Form, but Owner may accept them in any order or combination.
- 17.3 Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principle items of material or equipment) proposed for those portions of the work to which the identity of Subcontractors and other persons and organizations must be submitted as provided in the Supplementary Conditions.
- 17.4 Owner may conduct investigations he deems necessary to assist in the evaluations of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractor, and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.



- 17.5 Owner reserves the right to reject the Bid of any Bidder who does not pass investigation of evaluation to Owner's satisfaction. Owner may reject any Proposal where the unit price or individual lump sum prices are unbalanced and/or unfavorable to the Owner's interest.
- 17.6 Owner will not make any award or permit any award at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs under Executive Order 12549 "Debarment or Suspension." Each Contract and supplier (over \$25,000) shall complete the Certification Regarding Debarment, Suspension, and Other Responsibility Matters.
- 17.7 If Contract is awarded, it will be awarded to the lowest responsible and responsive Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interest of the Project.
- 17.8 If Contract is awarded, Owner will give the Successful Bidder a Notice of Award within 30 days of the day of the Bid opening.
- 17.9 When Owner give a Notice of Award to the Successful Bidder, it will be accompanied by at least three (3) unsigned counterparts of the Agreement and three (3) copies of all other Contract Documents. Within ten (10) days thereafter, Contractor shall sign and deliver at least three (3) counterparts of the Agreement to Owner with three (3) copies of all other Contract Documents attached. Within fifteen (15) days thereafter, Owner will deliver one copy of all fully signed counterparts to the Contractor.

ARTICLE 18 – CONTRACT SECURITY

- 18.1 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment Bonds or Contract Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such Bonds.

ARTICLE 19 – SIGNING OF AGREEMENT

- 19.1 When Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within 15 days thereafter, Owner shall deliver one fully signed counterpart to the Successful Bidder.

ARTICLE 20 – STATE SALES TAX

- 20.1 Materials to be incorporated in this work may be purchased by the Contractor free of state sales tax.

ARTICLE 21 – PREVAILING WAGE RATES

- 21.1 The Contractor and Subcontractors shall comply with the prevailing wage requirements within the Contract Documents.



SCOPE OF BIDS

Ashtabula County Commissioners New ACDES Office Buliding

It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature of location of the work; the conformation of the ground; the character quality, and quantity of the materials to be encountered; the character or equipment and facilities needed preliminary to and during the prosecution of the work; the general and local conditions; and all other matters which can, in any way, affect work under this Contract.

All known structures, pipelines, and utilities have been indicated in their approximate location on the plans, and any reasonable variation in size and location of structures and pipe shall not be cause for extra payment.

Major deviations or modification during construction, from that shown on, or the true intent of, the plans and specification requiring more or less labor and materials shall be authorized by Change Order prior to performing work.

The Contractor will be responsible for supplying, maintaining, and paying all costs associated with all temporary and permanent utility services as required for construction of the Work. The Contractor shall pay costs associated with material testing as required by the specifications.

The Bid price shall include the following:

1. All labor, materials, and equipment in accordance with Article 6 of the General Conditions.
2. All field surveying/staking necessary for construction.
3. All assistance required by the Engineer to verify compliance with the Contract Documents, including measuring for quantities.
5. All coordination, sequencing, and permits.
6. All costs associated material testing as required by the specifications.

Lump Sum Base Bid – New ACDES Office Building Complete: The lump sum Bid for this item shall include furnishing all materials, labor, tools, and equipment necessary to perform all general building, site, mechanical, electrical, heating, ventilation, and plumbing work to complete the ACDES Office Building complete and ready for occupancy in accordance with the Contract Documents.

The Successful Bidder will be required to furnish a breakdown of the lump sum Bid as required for estimating purposes to the satisfaction of the Engineer.

Alternate 1 – Connector and Garage Building: The lump sum Bid for this item shall include furnishing all materials, labor, tools, and equipment necessary to perform all general building, site, mechanical, electrical, heating, ventilation, and plumbing work to complete the attached Connector and Garage Building to the base bid ACDES Office Building complete and ready for occupancy in accordance with the Contract Documents.



Bidding Forms



BID GUARANTY AND CONTRACT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

R.L. Jackson Construction, LLC 4671 State Route 167 W, Pierpont, OH 44082

as Principal, and Nationwide Mutual Insurance Company

as Sureties, are hereby held and firmly bound unto

Ashtabula County Commissioners 25 West Jefferson Street Jefferson, Ohio 44047

hereinafter called the Oblige, in the penal sum of the dollar amount of the bid submitted by the Principal to the Oblige on
May 22, 2026 to undertake the project known as:

Ashtabula County Department of Environmental Services - New Office Building

The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Oblige, incorporating any additive or deductive alternate proposals made by the Principal on the date referred to above to the Oblige, which are accepted by the Oblige. In no case shall the penal sum exceed the amount of

One Million Nine Hundred Twenty-One Thousand dollars (\$ 1,921,000.00)

(If the foregoing blank is not filled in, the penal sum will be the full amount of the Principal's bid, including alternates. Alternatively, if the blank is filled in the amount stated must not be less than the full amount of the bid including alternates. in dollars and cents.) For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed this 22 day of May, 2026

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named Principal has submitted a bid on the above referred project.

NOW THEREFORE, if the Oblige accepts the bid of the principal and the principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the Principal pays to the Oblige the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid and such larger amount for which the Oblige may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the Oblige does not award the contract to the next lowest bidder and resubmits the project for bidding, the Principal will pay the Oblige the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be void, otherwise to remain in full force and effect. If the Oblige accepts the bid of the Principal and the Principal within ten days after the awarding of the contract, enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein;

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NOW ALSO, if the said Principal shall well and faithfully do and perform the things agreed to be done and performed according to the terms of said contract; and shall pay all lawful claims of subcontractors, materials suppliers, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materials suppliers or laborer having a just claim, as well as for the Obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

THE SAID Surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of said contract or in or to the plans and specifications therefore shall in any wise affect the obligations of said Surety on its bond.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal: R.L. Jackson Construction, LLC

Attest:

(SEAL)

Robert L Jackson
Witness as to Principal

By: [Signature] (SEAL)

Name: Elizabeth M Cole

Title: Notary Public, State of Ohio
Commission Ex 12-08-27

Surety: Nationwide Mutual Insurance Company

Attest:

(SEAL)

Don Tolly
Witness as to Surety Don Tolly

Surety Company Address:

One West Nationwide Blvd., 1-14-301
Street

Columbus OH 43215
City State Zip

(866) 387-0457
Telephone

By: [Signature] (SEAL)
Attorney-In-Fact Quinn Deyer

Surety Agent's Address:

Acisure Great Lakes Partners Insurance Services LLC
Agency Name

223 W Grand River Ave Suite 1
Street

Howell MI 48843
City State Zip

(248) 681-2100
Telephone

IMPORTANT - Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and must not exceed the underwriting limitations.

Surety companies and their agents or attorneys-in-fact must be authorized to transact business in the state where the Project is located and shall furnish proof of such authorization in the Bid.

1. The first part of the report deals with the general situation of the country. It is a very interesting and informative study of the country's development and progress. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

2. The second part of the report deals with the economic situation of the country. It is a very interesting and informative study of the country's economic development and progress. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

3. The third part of the report deals with the social situation of the country. It is a very interesting and informative study of the country's social development and progress. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

4. The fourth part of the report deals with the political situation of the country. It is a very interesting and informative study of the country's political development and progress. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

5. The fifth part of the report deals with the cultural situation of the country. It is a very interesting and informative study of the country's cultural development and progress. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

6. The sixth part of the report deals with the environmental situation of the country. It is a very interesting and informative study of the country's environmental development and progress. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

7. The seventh part of the report deals with the international situation of the country. It is a very interesting and informative study of the country's international development and progress. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

8. The eighth part of the report deals with the future of the country. It is a very interesting and informative study of the country's future development and progress. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS THAT:

Nationwide Mutual Insurance Company, an Ohio corporation

hereinafter referred to severally as the "Company" and collectively as "the Companies" does hereby make, constitute and appoint:
 BAYLEY REWA-SNIDER; BETH WALKER; DANIEL P CUSENZA; HEATHER BUONODONO; JANICE STICKLES; LORI KING-CLYDE; QUINN DEYER;
 SHANNON NYHUIS;

each in their individual capacity, its true and lawful attorney-in-fact, with full power and authority to sign, seal, and execute on its behalf on the date thereof any and all: (i) bonds and undertakings; (ii) Proposal Bonds; (iii) Letters of Surety; (iv) Consent of Surety; and (v) other obligatory instruments of similar nature, in penalties not exceeding the sum of

TEN MILLION AND NO/100 DOLLARS (\$10,000,000.00)

and to bind the Company thereby, as fully and to the same extent as if such instruments were signed by the duly authorized officers of the Company; and all acts of said Attorney pursuant to the authority given are hereby ratified and confirmed.

This power of attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the board of directors of the Company:

"RESOLVED, that the president, or any vice president be, and each hereby is, authorized and empowered to appoint attorneys-in-fact of the Company, and to authorize them to execute and deliver on behalf of the Company any and all bonds, forms, applications, memorandums, undertakings, recognizances, transfers, contracts of indemnity, policies, contracts guaranteeing the fidelity of persons holding positions of public or private trust, and other writings obligatory in nature that the business of the Company may require; and to modify or revoke, with or without cause, any such appointment or authority; provided, however, that the authority granted hereby shall in no way limit the authority of other duly authorized agents to sign and countersign any of said documents on behalf of the Company."

"RESOLVED FURTHER, that such attorneys-in-fact shall have full power and authority to execute and deliver any and all such documents and to bind the Company subject to the terms and limitations of the power of attorney issued to them, and to affix the seal of the Company thereto; provided, however, that said seal shall not be necessary for the validity of any such documents."

This power of attorney is signed and sealed under and by the following bylaws duly adopted by the board of directors of the Company.

Execution of Instruments. Any vice president, any assistant secretary or any assistant treasurer shall have the power and authority to sign or attest all approved documents, instruments, contracts, or other papers in connection with the operation of the business of the company in addition to the chairman of the board, the chief executive officer, president, treasurer or secretary; provided, however, the signature of any of them may be printed, engraved, or stamped on any approved document, contract, instrument, or other papers of the Company.

IN WITNESS WHEREOF, the Company has caused this instrument to be sealed and duly attested by the signature of its officer the 23rd day of October, 2025.



Antonio C. Albanese, Vice President of Nationwide Mutual Insurance Company

ACKNOWLEDGMENT

STATE OF OHIO COUNTY OF FRANKLIN: ss

On this 23rd day of October, 2025, before me came the above-named officer for the Company aforesaid, to me personally known to be the officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, deposes and says, that he is the officer of the Company aforesaid, that the seal affixed hereto is the corporate seal of said Company, and the said corporate seal and his signature were duly affixed and subscribed to said instrument by the authority and direction of said Company.



Karen L. Kam
 Notary Public, State of Ohio
 No. 2018-RE-719796
 Commission Expires July 7, 2028

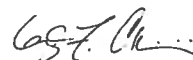

 Notary Public
 My Commission Expires
 July 7, 2028

CERTIFICATE

I, Lezlie F. Chimienti, Assistant Secretary of the Company, do hereby certify that the foregoing is a full, true and correct copy of the original power of attorney issued by the Company; that the resolution included therein is a true and correct transcript from the minutes of the meetings of the boards of directors and the same has not been revoked or amended in any manner; that said Antonio C. Albanese was on the date of the execution of the foregoing power of attorney the duly elected officer of the Company, and the corporate seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority of said board of directors; and the foregoing power of attorney is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of said Company this 22 day of

May 2026



Assistant Secretary

BID FORM

ACDES NEW OFFICE BUILDING

PART 1 - BID RECIPIENT

- 1.1 This Bid is submitted to:

**Ashtabula County Commissioners
25 West Jefferson Street
Jefferson, Ohio 44047**

- 1.2 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

PART 2 - BIDDER'S ACKNOWLEDGEMENTS

- 2.1 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

PART 3 - BIDDER'S REPRESENTATIONS

- 3.1 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

Addendum No.

Addendum Date

NO. 1

5-6-2026

NO. 2

5-19-2026

- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
- D. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
- E. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

1992-1993

1992-1993

1992-1993

1992-1993

1992-1993

1992-1993

1992-1993

1992-1993

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1992-1993

1992-1993

- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- G. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

PART 4 - FURTHER REPRESENTATIONS

- 4.1 Bidder further represents that:
- A. this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

PART 5 - BASIS OF BID

- 5.1 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Lump Sum Base Bid – ACDES Office Building, Complete:

One Million Four Hundred Thirty Three Thousand (words) \$ 1,433,000.00 (numerals)

Lump Sum Alternate #1: Connector and Garage Building Complete

Four Hundred Forty Five Thousand (words) \$ 445,000.00 (numerals)

Lump Sum Alternate #2: 40 kW Generator and Transfer Wwitch, Complete

Forty Three Thousand (words) \$ 43,000.00 (numerals)

1. The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom.

2. In the second part, we shall consider the question of the structure of the atom in the case of a single electron.

3. The third part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a multi-electron atom.

4. The fourth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a molecule.

5. The fifth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a crystal.

6. The sixth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a liquid.

7. The seventh part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a gas.

8. The eighth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a plasma.

9. The ninth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a solid.

10. The tenth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a superconductor.

11. The eleventh part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a semiconductor.

12. The twelfth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a dielectric.

13. The thirteenth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a magnetic material.

14. The fourteenth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a piezoelectric material.

15. The fifteenth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a ferroelectric material.

16. The sixteenth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a superconductor.

17. The seventeenth part of the paper is devoted to a discussion of the question of the structure of the atom in the case of a semiconductor.

- 6.2 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the Contract Times.

PART 7 - ATTACHMENTS TO THIS BID

- 7.1 The following documents are attached to and made a condition of this Bid:

- A. Required Bid security in the form of 100% Bid Bond
B. All forms listed in Section 2 – Bid Forms, "Table of Contents."

PART 8 - DEFINED TERMS

- 8.1 The terms used in this Bid with initial capital letters have the meanings stated in the Instruction to Bidders, the General Conditions, and Supplementary Conditions.

SUBMITTED ON

- 9.1 This bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): Robert L Jackson
By: Robert L Jackson (SEAL)
(Individual's signature)
Doing business as: R.L. Jackson Construction LLC

A Partnership

Partnership Name: N/A (SEAL)
By: _____
(Signature of general partner -- attach evidence of authority to sign)
Name (typed or printed): _____

A Corporation

Corporation Name: N/A (SEAL)
State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability): _____
By: _____
(Signature -- attach evidence of authority to sign)
Name (typed or printed): _____
Title: _____ (CORPORATE SEAL)
Attest: _____

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Date of Authorization to do business in Ohio is 7 / 16 / 22

Miscellaneous

Bidder's Business Address 4671 R+ 167

Pickers, Oh, 44082

Phone No. 440-812-8622

Fax No. _____

SUBMITTED on May 22, 20 26.

1. The first part of the paper is devoted to the study of the

properties of the

operator T defined by

$Tf(x) = \int_0^x f(t) dt$

for $f \in L^p(\mathbb{R})$.

It is shown that

NON-COLLUSION AFFIDAVIT

STATE OF Ohio)
COUNTY OF Ashtabula) ss.

I, Robert L Jackson (name of person signing Affidavit), being duly sworn deposes and says as follows:

That the Affiant is the Chief Executive Manager (title) of R.L. JACKSON Construction LLC (name of corporation or company)

the Bidder who made the foregoing proposal or bid; that the bid proposal was genuine and not collusive; that said bidder did not collude, conspire, connive, or agree, directly or indirectly, with any bidder or other person, that such other bidder or person should refrain from bidding or submit a sham bid; further, such bidder did not in any manner, directly or indirectly, seek by agreement, or collusion, or communication, or conference with any person, to fix the bid price of either this bidder or any other bidder or to fix overhead, profit or cost element of the bid price; that said bidder did not collude, conspire or agree to secure any advantage against the Owner, or any person interested in the proposed contract. Affiant further says that all statements contained in this bid or proposal are true to the best of Affiant's knowledge and belief. Affiant further says that this bidder did not, directly or indirectly, submit this bid or the contents thereof, or divulge information or data thereto, to any other bidder or association, or to any agent or member thereof.

Robert L Jackson
Affiant's Signature

Partner, if the bidder is a Partnership

Officer, if the bidder is a Corporation

Sworn to and subscribed before me this 22 day of May, 2026.

Elizabeth M Cek
Notary Public

(SEAL)



Elizabeth M Cek
Notary Public, State of Ohio
My Commission Expires 12-08-2027

Ashtabula County, Ohio.

My commission expires
December 8th, 2027.

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EXPERIENCE RECORD*

The Bidder is required to state the character of previous work, give references, and such other detailed information as will enable the Owner to determine responsibility, including experience, skill, and financial standing. Projects shall be for Owners other than this Project and for Engineer other than this Projects' Engineer.

PROJECT NAME: Ferrul Hot Glass
DESCRIPTION: 8,000 SQ Commercial Building

OWNER: MARK Rubelowsky PERSON TO CONTACT: MARK Rubelowsky
ADDRESS: _____ PHONE: 618-713-1456
CITY/STATE/ZIP: _____

PROJECT NAME: Village of Rock Creek
DESCRIPTION: Rebuild sewer plant

OWNER: Village of Rock Creek PERSON TO CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

PROJECT NAME: Village of Jefferson
DESCRIPTION: Road Dept New Building

OWNER: Village of Jefferson PERSON TO CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

*USE ADDITIONAL COPIES OF THIS FORM AS REQUIRED

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
5301 S. DICKINSON DRIVE
CHICAGO, ILL. 60637

TO THE EDITOR:
I am writing to you to inform you of the results of my research on the properties of the new material which I have discovered.

The material is a new type of polymer which has been synthesized by a new method. It has many unique properties which make it very interesting for further study.

I have found that the material is very strong and has a high melting point. It is also very resistant to chemical attack and is very stable.

I have also found that the material is very flexible and can be easily molded into various shapes. It is also very transparent and has a high refractive index.

I believe that this material has many potential applications in the field of materials science. I am currently working on further studies to determine its properties and potential uses.

I am very grateful for the support and assistance of the University of Chicago and the Division of the Physical Sciences. I hope that you will find this information of interest.

Sincerely,
[Signature]

EXPERIENCE RECORD*

The Bidder is required to state the character of previous work, give references, and such other detailed information as will enable the Owner to determine responsibility, including experience, skill, and financial standing. Projects shall be for Owners other than this Project and for Engineer other than this Projects' Engineer.

PROJECT NAME: Commercial Building

DESCRIPTION: _____

North East Auto Recycle's

OWNER: _____ PERSON TO CONTACT: Smolen

ADDRESS: _____ PHONE: _____

CITY/STATE/ZIP: _____

PROJECT NAME: Senator O'Brien Dam Rebuild

DESCRIPTION: concrete structure

OWNER: _____ PERSON TO CONTACT: Smolen

ADDRESS: _____ PHONE: _____

CITY/STATE/ZIP: _____

PROJECT NAME: _____

DESCRIPTION: _____

OWNER: _____ PERSON TO CONTACT: _____

ADDRESS: _____ PHONE: _____

CITY/STATE/ZIP: _____

*USE ADDITIONAL COPIES OF THIS FORM AS REQUIRED

EXPERIENCE RECORD*

The Bidder is required to state the character of previous work, give references, and such other detailed information as will enable the Owner to determine responsibility, including experience, skill, and financial standing. Projects shall be for Owners other than this Project and for Engineer other than this Projects' Engineer.

PROJECT NAME: Commercial Building Rehab
DESCRIPTION: trusses

Conneaut - Commercial Rental Property
OWNER: _____ PERSON TO CONTACT: Smolens
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

PROJECT NAME: Rails to trails - westburg
DESCRIPTION: Building for his - hers Bathrooms

OWNER: _____ PERSON TO CONTACT: Smolens
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

PROJECT NAME: _____
DESCRIPTION: _____

OWNER: _____ PERSON TO CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

*USE ADDITIONAL COPIES OF THIS FORM AS REQUIRED

EXPERIENCE RECORD*

The Bidder is required to state the character of previous work, give references, and such other detailed information as will enable the Owner to determine responsibility, including experience, skill, and financial standing. Projects shall be for Owners other than this Project and for Engineer other than this Projects' Engineer.

PROJECT NAME: Subdivisions behind Andover Corporate Headquarters
DESCRIPTION: 6 - houses, foundations, footers, all carpentry, subfloors, walls, trusses, Roof, siding

OWNER: _____ PERSON TO CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

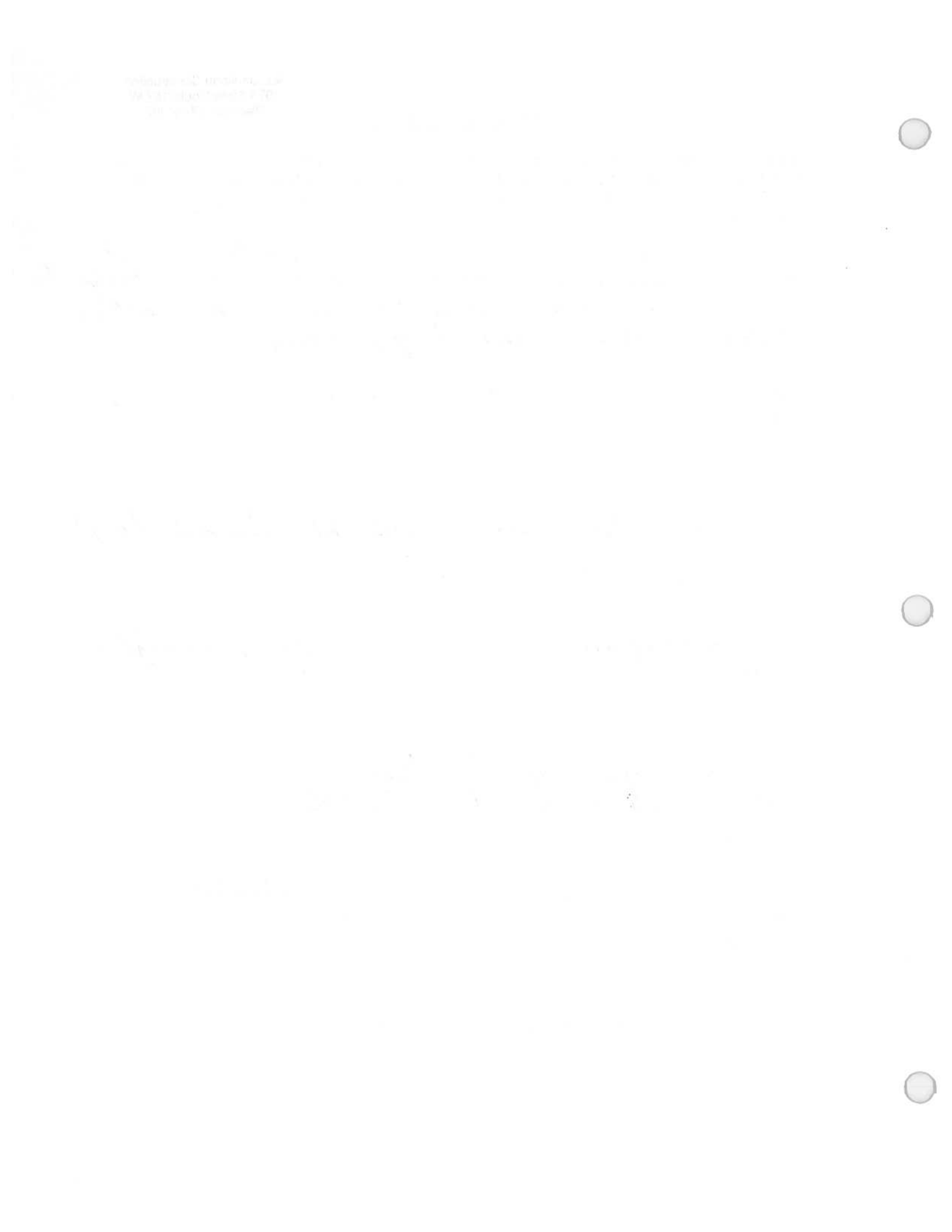
PROJECT NAME: New home, hall Rd, Richmond Twp
DESCRIPTION: _____

OWNER: Whittington PERSON TO CONTACT: Kathy Whittington
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

PROJECT NAME: Villages of Rock Creek
DESCRIPTION: Sewer plant Rebuild

OWNER: _____ PERSON TO CONTACT: Smolen
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

*USE ADDITIONAL COPIES OF THIS FORM AS REQUIRED



EXPERIENCE RECORD*

The Bidder is required to state the character of previous work, give references, and such other detailed information as will enable the Owner to determine responsibility, including experience, skill, and financial standing. Projects shall be for Owners other than this Project and for Engineer other than this Projects' Engineer.

PROJECT NAME: Holiday Village Sewer plant
DESCRIPTION: poured walls

OWNER: _____ PERSON TO CONTACT: Smolen
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

PROJECT NAME: Orwell Village Ladicap Ramps
DESCRIPTION: Concrete

OWNER: _____ PERSON TO CONTACT: Smolen
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

PROJECT NAME: O'Riely Auto Parts
DESCRIPTION: Trusses

OWNER: _____ PERSON TO CONTACT: Smolen
ADDRESS: _____ PHONE: _____
CITY/STATE/ZIP: _____

*USE ADDITIONAL COPIES OF THIS FORM AS REQUIRED

SUBCONTRACTORS

The Bidder is required to state the Subcontractors proposed to be utilized in the work. Provide name, address, telephone number, and amount of subcontract. Failure to list Subcontractors here may result in rejection of the Bid.

Name: M+J Electric - Mark Solarek

Address: _____

City/State/Zip: _____

Description of Work: Electric

Phone: 440-228-4857 Amount: \$160,000.00

Name: Ogram - Heating + Cooling

Address: Andover, Oh

City/State/Zip: 44003

Description of Work: Hvac

Phone: 440-293-6946 Amount: \$140,000.00

Name: Robert E Anchor Plumbing & Inc.

Address: Rock Creek, Oh, 44084

City/State/Zip: _____

Description of Work: Plumbing

Phone: 440-474-9354 Amount: \$105,000.00

SARAH Koski
5841 WOODMAN AVE.

P.O BOX 1038

ASHTABULA, OH 44005 AMOUNT \$68,000.00

The first part of the document discusses the importance of maintaining accurate records of all transactions and the role of the accounting department in ensuring the integrity of the financial data.

2. Financial Reporting and Analysis

2.1. Monthly Financial Statements

The accounting department is responsible for preparing the monthly financial statements, including the balance sheet, income statement, and cash flow statement.

2.2. Budgetary Control and Variance Analysis

The department also monitors the company's performance against the budget, identifying variances and providing recommendations for corrective action.

2.3. Tax Compliance and Reporting

The accounting department ensures that the company complies with all applicable tax laws and regulations, and prepares the necessary tax returns.

2.4. Internal Controls and Risk Management

The department implements and maintains internal controls to minimize the risk of fraud and error, and ensures the accuracy and reliability of the financial data.

The accounting department also provides financial analysis and reporting to management, helping them make informed decisions about the company's financial future.

In conclusion, the accounting department plays a vital role in the company's financial management, ensuring the accuracy and integrity of the financial data and providing valuable insights into the company's performance.

F & B Engineering, Inc.

Governmental Solutions, Plan Review Services, Inspection Services, & Design Services

This addendum must be acknowledged in your bid in order for your bid to be considered for award of this project. It can be acknowledged on the bid form sheet or this cover sheet may be included in your bid. Failure to acknowledge this addendum will result in the rejection of your bid.

Date of Issue: May 19, 2026

Addendum Number: No. 2

Project: Ashtabula County Department of Env. Services Office Building

Bid Opening: May 22, 2026 @ 3:00 p.m.

The following clarifications and responses to RFI's are offered:

1. Is tele/data by others?

Yes, rough in is by electrical contractor and the County will install tele/data in house.

2. Should we install a 4" conduit to the utility pole for tele/data services?

Yes, 2 spare 4-in schedule 40 PVC conduits should be installed adjacent to conduit for electrical service conductors. One will be used for tele/data and one will be a spare for future use.

3. On Sheet A800-A, the general note under the Door Schedule indicates all wood doors are to be Red Oak veneer. The Spec Section 08211 - Flush Wood Doors, Paragraph 2.04 B indicates the doors to be Plain Sliced Maple. Which is correct?

All wood door veneer to be plain sliced red oak, AWS Custom Grade Architectural "A" grade.

4. Under slab vapor barrier motions 6 Mil on drawings but "General structural notes" on S001 mentions 10Mil?

Under slab vapor barrier to be 6 mil.

5. Is it the intentions that ALL of the perimeter slab on grade will require edge forming due to no perimeter masonry block?

Yes, it is intended the building slab will be edge formed.

6. Is there a Civil drawing showing the Alt. 1 Garage built? (Not sure if additional site curbs or walks will be needed if Alt.1 is accepted)

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CHICAGO, ILLINOIS 60637

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CHICAGO, ILLINOIS 60637

F & B Engineering, Inc.

Governmental Solutions, Plan Review Services, Inspection Services, & Design Services

This addendum must be acknowledged in your bid in order for your bid to be considered for award of this project. It can be acknowledged on the bid form sheet or this cover sheet may be included in your bid. Failure to acknowledge this addendum will result in the rejection of your bid.

Date of Issue: May 6, 2026

Addendum Number: No. 1

Project: Ashtabula County Department of Env. Services Office Building

Bid Opening: May 22, 2026 @ 3:00 p.m.

The following documents are included in this addendum and shall become part of the Bid Documents:

- Civil Construction Documents:
 - Sheet C001 – Site Demolition Plan
 - Sheet C100 – Site Layout Plan
 - Sheet C101 – Site Grading Plan
 - Sheet C102 – Site Utility Plan
 - Sheet C103 – BMP Plan (Erosion Control)
 - Sheet C200 – Site Details
 - Sheet C201 – Site Details
 - Sheet C202 – BMP Details

The following clarifications and responses to RFI's are offered:

- Roof Framing Plan (Alternate A) was misnumbered and has been revised to Sheet S101-A and is included with this addendum.
- Tufftec Lockers by Scranton Products are an acceptable equivalent to Specification Section 08500.

End of Addendum No. 1

F. & H. Engineering, Inc.

INCORPORATED IN THE STATE OF NEW YORK

OFFICE: 100 WEST 42ND STREET, NEW YORK 36, N.Y.
TELEPHONE: MU 2-1111
CABLE: F&HEIN

BRANCH OFFICES:

ALBANY, N.Y. - 123 N. ALBANY ST.

ALBANY, N.Y. - 123 N. ALBANY ST.

ALBANY, N.Y. - 123 N. ALBANY ST.

ALBANY, N.Y. - 123 N. ALBANY ST.

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ALBANY, N.Y. - 123 N. ALBANY ST.

ALBANY, N.Y. - 123 N. ALBANY ST.

ALBANY, N.Y. - 123 N. ALBANY ST.

ALBANY, N.Y. - 123 N. ALBANY ST.

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ALBANY, N.Y. - 123 N. ALBANY ST.

ALBANY, N.Y. - 123 N. ALBANY ST.



RLJACKS-01

EDAVIS3

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

5/15/2026

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Acrisure Great Lakes Partners Insurance Services, LLC
223 West Grand River Ave #1
Howell, MI 48843

CONTACT NAME: Elizabeth Davis

PHONE

(A/C, No, Ext):

FAX

(A/C, No):

E-MAIL ADDRESS: elizdavis@acrisure.com

INSURER(S) AFFORDING COVERAGE

NAIC #

INSURER A: Western Reserve Mutual Casualty Company 26131

INSURER B:

INSURER C:

INSURER D:

INSURER E:

INSURER F:

INSURED

RL Jackson Construction LLC
4671 Rt 167
Pierpont, OH 44082

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☒ POLICY ☐ PRO-JECT ☐ LOC OTHER:			BOP 0005016284	6/29/2025	6/29/2026	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMPIOP AGG \$ 2,000,000
	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
	☐ UMBRELLA LIAB ☐ OCCUR ☐ EXCESS LIAB ☐ CLAIMS-MADE ☐ DED ☐ RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A				PER STATUTE ☐ OTH-ER ☐ E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

Ashtabula County Board Of Commissioners
25 West Jefferson Street
Jefferson, OH 44047

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

[Signature]

ACORD 25 (2016/03)

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**Bureau of Workers'
Compensation**

30 West Spring Street
Columbus, Ohio 43215-2256

1-800-644-6292 BWC.Ohio.gov

Mike DeWine, Governor Jim Tressel, Lt. Governor Stephanie McCloud, Administrator/CEO

04/20/2026
Date Mailed

#BWNFVSQ
#XX10026234113#

R L Jackson Construction LLC
4671 State Route 167 W
Pierpont OH 44082-9710

IMPORTANT DOCUMENT: REMOVE AND POST



10-10-2000 10:00 AM
10-10-2000 10:00 AM
10-10-2000 10:00 AM

10-10-2000 10:00 AM
10-10-2000 10:00 AM

10-10-2000 10:00 AM
10-10-2000 10:00 AM





**Bureau of Workers'
Compensation**

30 W. Spring St.
Columbus, OH 43215

Certificate of Ohio Workers' Compensation

This certifies that the employer listed below participates in the Ohio State Insurance Fund as required by law. Therefore, the employer is entitled to the rights and benefits of the fund for the period specified. This certificate is only valid if premiums and assessments, including installments, are paid by the applicable due date. To verify coverage, visit www.bwc.ohio.gov, or call 1-800-644-6292.

This certificate must be displayed at your workplace or posted online where your employees can access it.

Policy number and employer
80162471

Period Specified Below
07/01/2026 to 07/01/2027

R L Jackson Construction LLC
4671 State Route 167 W
Pierpont OH 44082-9710



www.bwc.ohio.gov

Issued by: BWC

Stephanie McCloud

Administrator/CEO

You can reproduce this certificate as needed.

Ohio Bureau of Workers' Compensation

Required Posting

Section 4123.54 of the Ohio Revised Code requires notice of rebuttable presumption. Rebuttable presumption means an employee may dispute or prove untrue the presumption (or belief) that alcohol, marihuana or a controlled substance not prescribed by the employee's physician is the proximate cause (main reason) of the work-related injury.

The burden of proof is on the employee to prove the presence of alcohol, marihuana or a controlled substance was not the proximate cause of the work-related injury. An employee who tests positive or refuses to submit to chemical testing may be disqualified for compensation and benefits under the Workers' Compensation Act.



**Bureau of Workers'
Compensation**

You must post this language with the Certificate of Ohio Workers' Compensation.



Statement of the Director of the Bureau of Labor Statistics

The Bureau of Labor Statistics is pleased to announce that it has received from the Bureau of Census, U.S. Department of Commerce, a copy of the report of the Committee on the Status of the Negro in the United States, published by the National Association for the Advancement of Colored People (NAACP).

The report is a valuable contribution to the knowledge of the Negro population in the United States and is a most timely and important document.

Very truly yours,
Director

Enclosed for the Bureau of Labor Statistics are two copies of the report of the Committee on the Status of the Negro in the United States, published by the National Association for the Advancement of Colored People (NAACP).



Very truly yours,
Director

Enclosed for the Bureau of Labor Statistics are two copies of the report of the Committee on the Status of the Negro in the United States, published by the National Association for the Advancement of Colored People (NAACP).

Administrative

Very truly yours,
Director

Statement of the Director of the Bureau of Labor Statistics

Report of the Committee on the Status of the Negro in the United States

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Very truly yours,
Director



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Policy Information

Policy Information for the policy period beginning from 12:01 AM on 07/01/2026 to 12:01 AM on 07/01/2027.

Policy Number and Employer	MCO
80162471 R L Jackson Construction LLC 4671 State Route 167 W Pierpont OH 44082-9710	SHEAKLEY UNICOMP 9987 CARVER RD STE 300 BLUE ASH OH 452425563

Additional Insured's Name and Address	Effective Date	Expiration Date

Individuals Eligible for Elective Coverage		
Individuals Eligible for Elective Coverage	Covered (Yes/No)	Elective Coverage Type
ROBERT L JACKSON	No	Elective - Owner

**Please refer to our website for reporting guidelines/requirements.

Corporate Officer	Effective Date	Expiration Date
No officers listed for this policy.		

**Please refer to our website for reporting guidelines/requirements.

Employee Class Codes and Descriptions	
Class Code	Class Code Description
5645	CARPENTRY-CONSTRUCTION OF RESIDENTIAL DWELLINGS NOT EXCEEDING TH

The information noted above is as of 04/18/2026. For the most current information on the policy or to update your account information, please log into your account at www.bwc.ohio.gov. You may also call 1-800-644-6292 to speak with a customer service representative.

Contract Forms

NOTICE OF AWARD

To: R.L. Jackson Construction
4671 ST RT 167
Pierpont, Ohio 44082

Date: June 9, 2026

Project Description: ACDES New Office and Storage Building

The OWNER has considered the Bid submitted by you on May 22, 2026 (Bid Date) for the above described work in response to its Advertisement for Bids and Instructions to Bidders

You are hereby notified that your Bid has been accepted for items in the amount of

\$ 1,921,000.00.

You are required by the Instructions to Bidders to execute the Agreement, complete and sign all contract forms, and furnish the required Contract Bond (if applicable) and Certificate of Insurance within 15 calendar days from the date of this notice.

If you fail to execute said Agreement and to furnish said Bonds within 15 calendar days from the date of this notice, said OWNER will be entitled to consider all your rights arising out of the OWNER's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged

By R.L. Jackson Construction LLC
CONTRACTOR

this the 9th day of
June, 2026

By Robert L Jackson

Name Robert Jackson

Title Chief Executive Manager

Copy: Contractor's Surety
Surety's Agent

Ashtabula County Commissioners
25 West Jefferson Street
Jefferson, Ohio 44047

Casey Kozłowski, President

Date: 6-9-26

Kathryn Whittington, Vice President

Date: _____

J.P. Ducro, IV

Date: 6-9-26

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research. It also mentions the scope of the study and the limitations of the research.

2. The second part of the report is a detailed description of the methodology used in the study. It includes information about the sample size, the data collection methods, and the statistical analysis techniques used. It also discusses the validity and reliability of the data.

3. The third part of the report is a discussion of the results of the study. It presents the findings of the research and discusses their implications. It also compares the results with previous studies and discusses the strengths and weaknesses of the study.

4. The fourth part of the report is a conclusion and a summary of the findings. It reiterates the main points of the study and provides a final statement on the significance of the research. It also includes a list of references and a list of appendices.

5. The fifth part of the report is a list of references. It includes a list of all the sources used in the study, including books, articles, and websites. It is formatted according to the requirements of the journal or publisher.

6. The sixth part of the report is a list of appendices. It includes any additional information that is relevant to the study, such as raw data, questionnaires, and interview transcripts. It is formatted according to the requirements of the journal or publisher.

AGREEMENT

THIS AGREEMENT is dated as of the 9th day of June in the year 20 26 by and between

Ashtabula County Commissioners

(hereinafter called Owner)

and R.L. Jackson Construction LLC

(hereinafter called

Contractor)

Owner and Contractor, in consideration of the mutual covenants set forth herein, agree as follows:

ARTICLE 1 - WORK

Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

This project consists of the construction of a 5,000 square foot office building as well as a new attached storage and connector building in Jefferson, Ohio.

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

ACDES New Office Building

ARTICLE 2 - ENGINEER

The Project has been designed by F&B Engineering, Inc. 34 N. Chestnut Street, Jefferson, Ohio 44047 (Engineer), who is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 3 – CONTRACT TIME

The Contractor agrees that the work will be substantially complete within 180 Calendar Days after the date when the Contract Time commences to run as provided in paragraph 2.03 of the General Conditions, and complete and ready for final payment in accordance with paragraph 14.07 of the General Conditions within 210 Calendar Days after the date when the Contract Time commences to run.

Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500 for each day that expires after the time specified in Paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$ 1,000 for each day that expires after the time specified in Paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 4 - CONTRACT PRICE

Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds of \$ 1,921,000.00, in accordance with the Bid Form as awarded by the Owner as included herein, subject to additions and deductions by Change Order and quantities actually performed.

ARTICLE 5 - PAYMENT PROCEDURES

Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment each month during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed):
 - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:
 - a. 92 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, Owner, on recommendation of Engineer, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no additional retainage; and
 - b. 92 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
 - 2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 10 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.
 - 2. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 6 – CONTRACTOR'S REPRESENTATIONS

In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- E. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- F. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
- G. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- H. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Subscription price, Five Dollars Per Annum in Advance. Single Copies, Fifteen Cents. Entered as Second-Class Matter, October 3, 1917. Postpaid. Accepted for mailing at special rate of postage provided for in Act of October 3, 1917. Authorized Second-Class Mail Matter.

Published by THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 535 North Dearborn Street, Chicago, Ill. 60610. Second-class postage paid at Chicago, Ill., and at additional mailing offices. Postmaster: Send address changes in this journal to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 535 North Dearborn Street, Chicago, Ill. 60610.

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Editorial and business communications should be addressed to the Editor, The Journal of the American Medical Association, 535 North Dearborn Street, Chicago, Ill. 60610. Communications regarding subscriptions should be addressed to the Business Manager, The Journal of the American Medical Association, 535 North Dearborn Street, Chicago, Ill. 60610.

Advertisements should be sent to the Advertising Manager, The Journal of the American Medical Association, 535 North Dearborn Street, Chicago, Ill. 60610. The advertising rate card is on the inside back cover. The Journal is indexed and abstracted in the following publications: Index Medicus, Current Contents, and the Index to the Literature of Medicine.

The Journal is published weekly, except during the summer months when it is published bi-weekly. The subscription price is \$5.00 per annum in advance.

Single copies are sold at the rate of fifteen cents. The Journal is published by The American Medical Association, 535 North Dearborn Street, Chicago, Ill. 60610.

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ARTICLE 7 - CONTRACT DOCUMENTS

The Contract Documents which comprise the entire Agreement between Owner and Contractor concerning the Work consists of the following:

- A. This Agreement
- B. Exhibits to this Agreement
- C. Bidding Requirements including Legal Notice and Instructions to Bidders. Contract Forms including Agreement, Bonds, Notice of Award, Change Order, General Conditions, and Supplementary Conditions.
- D. Specifications and Supplemental Specifications prepared or issued by F&B Engineering, Inc.
- E. Drawings prepared by F&B Engineering dated April 24, 2026_____
- F. Addenda:
 - No. 1, dated 5-6-26
 - No. 2, dated 5-19-26
 - No. _____, dated _____
 - No. _____, dated _____
- G. Bidding Forms including Bid Bond or Guaranty, and Bid Form
- H. Documentation submitted by Contractor prior to Notice of Award.

ARTICLE 8 - MISCELLANEOUS

Terms:

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, Owner and Contractor have signed 3 copies of this Agreement. One counterpart each has been delivered to Owner and Contractor.

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Published by THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 535 North Dearborn Street, Chicago, Ill.

The Effective Date of this Agreement shall be this 9th day of June,
20 26

OWNER:

Ashtabula County Commissioners


Casey Kozlowski, President


Kathryn Whittington, Vice President


J.P. Duro, IV

Address for giving notices:

25 West Jefferson Street

Jefferson, Ohio 44047

Approved as to Form:

County Prosecutor see next page

CONTRACTOR:

R.L. Jackson Construction LLC

By: 

Title: Chief Executive Manager

Attest: 

Title: N/A

Address for giving notices:

4671 ST RT 167

Pierpont, Ohio 44082

Robert L. Johnson

1902

1902

1902

The Effective Date of this Agreement shall be this _____ day of _____, 20 26

OWNER:

Ashtabula County Commissioners

Casey Kozlowski, President

Kathryn Whittington, Vice President

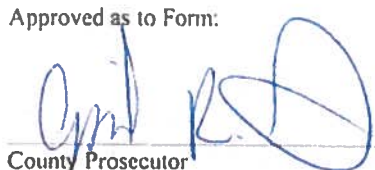
J.P. Ducro, IV

Address for giving notices:

25 West Jefferson Street

Jefferson, Ohio 44047

Approved as to Form:



County Prosecutor

CONTRACTOR:

R.L. Jackson Construction LLC

By: 

Title: Chief Executive Manager

Attest:  [CORPORATE SEAL]

Title: N/A

Address for giving notices:

4671 ST RT 167

Pierpont, Ohio 44082



AFFIDAVIT
OF COMPLIANCE WITH OHIO REVISED CODE SECTION 3517.13

STATE OF Ohio)
) SS
COUNTY OF Ashtabula)

Robert L. Jackson being duly sworn deposes and states as follows:

1. I am duly authorized to make the statements contained herein on behalf of R. L. Jackson Construction LLC ("the Contracting Party").
2. The Contracting Party is a/an (select one):
 - ☐ Individual, partnership, or other unincorporated business association (including without limitation, a professional association organized under Ohio Revised Code Chapter 1787), estate, or trust
 - ☒ Corporation organized and existing under the laws of the State of Ohio
 - ☐ Labor organization
3. I hereby affirm that the Contracting Party and each of the individuals specified in R.C. 3517.13(I) (with respect to non-corporate entities and labor organizations) or R.C. 3517.13(J) (with respect to corporations) are in full compliance with the political contribution limitations set forth in R.C. 3517.13(I) and (J), as applicable.
4. I understand that a false representation on this certification will incur penalties pursuant to 3517.992(R).

Affiant further sayeth naught.

By: Robert L. Jackson
Title: Chief Executive Manager

SWORN TO BEFORE ME and subscribed in my presence this 8th day of June, 2026.

James S. Savell Jr.
Notary Public



JAMES S SAVEL JR
Notary Public
State of Ohio
My Comm. Expires
November 17, 2030

My commission expires: 11-17-2030

MEMORANDUM

TO : THE SECRETARY OF DEFENSE

FROM : THE SECRETARY OF THE ARMY

SUBJECT: [Illegible]

1. [Illegible]

2. [Illegible]

3. [Illegible]

4. [Illegible]

5. [Illegible]

6. [Illegible]

7. [Illegible]

8. [Illegible]

9. [Illegible]

10. [Illegible]

11. [Illegible]

12. [Illegible]

13. [Illegible]

14. [Illegible]

15. [Illegible]

16. [Illegible]

17. [Illegible]

18. [Illegible]

19. [Illegible]

20. [Illegible]

21. [Illegible]

22. [Illegible]

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41. [Illegible]

42. [Illegible]

43. [Illegible]

For the Secretary of the Army

[Illegible Signature]

RECEIVED
OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D.C.
NOV 11 1954



DELINQUENT PERSONAL PROPERTY STATEMENT

R.L. Jackson Construction LLC, having been awarded a contract by Ashtabula County Commissioners; hereby affirms under oath, pursuant to Ohio Revised Code Section 5719.042, that at the time the bid was submitted, my company **was/was not** charged with delinquent personal property taxes on the General Tax List of Personal Property for Ashtabula County, Ohio.

If such charge for delinquent personal property tax exists on the General Tax List of Personal Property for Ashtabula County, Ohio, the amount of such due and unpaid delinquent taxes, including due and unpaid penalties and interest shall be set forth below.

A copy of this statement shall be transmitted by the Taxing District's Fiscal Officer to the County Treasurer within thirty days of the date it is submitted. A copy of this statement shall also be incorporated into the Contract made between R.L. Jackson Construction LLC and Ashtabula County Commissioners and no payment shall be made with respect to any Contract unless such statement has been so incorporated as a part thereof.

Delinquent Personal Property Tax	\$ <u>0.00</u>
Penalties	\$ <u>0.00</u>
Interest	\$ <u>0.00</u>

CONTRACTOR

Robert L Jackson

Subscribed in my presence, and sworn before me, this 8th day of June, 2026.

James S Savel Jr
Notary Public



JAMES S SAVEL JR
Notary Public
State of Ohio
My Comm. Expires
November 17, 2030

THE STATE OF OHIO
DOES hereby certify that
the within and foregoing is a true and correct copy
of the original as the same appears from the records
of the office of the Secretary of State.

James S. Sweet

James S. Sweet, Jr.
Notary Public
State of Ohio
My Comm. Expires
November 1st, 1914





Office of Auditor of State
88 East Broad Street
Post Office Box 1140
Columbus, OH 43216-1140

Auditor of State - Unresolved Findings for Recovery Certified Search

(614) 466-4514
(800) 282-0370

I have searched The Auditor of State's unresolved findings for recovery database using the following criteria:

Contractor's Information:

Name: **Jackson, Robert**
Organization: **R.L. Jackson Construction LLC**
Date: **6/8/2026 8:54:28 AM**

This search produced the following list of **30** possible matches:

Name/Organization	Address
Jackson, Annie	108 North Sugar Street
Jackson, Dorothy	4470 Granada Blvd., Apt. #3
Jackson, James	233 West Hillcrest Avenue
Jackson, Ryan	1846 Old 122 Road
Jackson, Stanley	2428 Greenvale Road
Arnold, Robert	63 South Summit Street
Libbo, Robert	312 N. Jefferson Street
Campbell, Robert	199 Portsmouth St.
Cannon, Jr., Robert	9038 Bedford Court
Cowman, Robert	2822 State Route 180
Godown, Robert	1121 Roberts Road
Gullette, Robert	
Haney, Robert	32060 Moravian Trail Road
Henley, Robert	
Hindall, Robin	3990 County Road 93
Holmes, Robert	295 Brookview Court
Hupp, Robert	2032 Miracle Mile
Kendall, Robert	1801 E. 9th St.
Mahlman, Robert	19441 Mermill Road
Moore, Robert	5979 Section Line Road
Owen, Robert	13 Forestdale Avenue
Owens, Robert	13 Forestdale Avenue
R.L. Thomas Transportation Incorporated	3155 Chelsea Road
Richardson, Robert	C/O Jeffrey Hunter, ESQ
Robinson, Roberta	100 East Siebenthaler Avenue
Steigerwald, Robert	4248 Loubell Lane
Vanderhorst, Robert	3928 White Spruce Circle

Name/Organization	Address
Watkins, Robyn	1855 Ransburg Avenue
Watkins, Robyn	1855 Ransburg Avenue
Welch, Robert	419 Jacobs St.

The above list represents possible matches for the search criteria you entered. Please note that pursuant to ORC 9.24, only the person (which includes an organization) actually named in the finding for recovery is prohibited from being awarded a contract.

If the person you are searching for appears on this list, it means that the person has one or more findings for recovery and is prohibited from being awarded a contract described in ORC 9.24, unless one of the exceptions in that section apply.

If the person you are searching for does not appear on this list, an initialed copy of this page can serve as documentation of your compliance with ORC 9.24(E).

Please note that pursuant to ORC 9.24, it is the responsibility of the public office to verify that a person to whom it plans to award a contract does not appear in the Auditor of State's database. The Auditor of State's office is not responsible for inaccurate search results caused by user error or other circumstances beyond the Auditor of State's control.



NOTICE TO PROCEED

To: R.L. Jackson Construction LLC
4671 ST RT 167
Pierpont, Ohio 44082

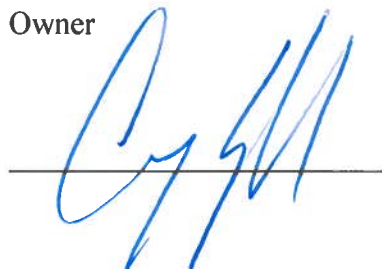
Date: _____

Project: Ashtabula County Department of Environmental Services New Office Building

Owner: Ashtabula County Commissioners

You are hereby notified to commence work for the above referenced project in accordance with the Agreement dated the 9th day of June 2026.

Owner



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CHANGE ORDER

No. _____

DATE OF ISSUANCE: _____ EFFECTIVE DATE: _____

OWNER _____
 CONTRACTOR _____
 Contract _____
 Project _____
 OWNER's Contract No. _____ ENGINEER's Project No. _____
 ENGINEER: _____

You are directed to make the following changes in the Contract Documents:
 Description: _____

Reason for Change Order: _____

Attachments: _____

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIMES
Original Contract Price \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____ (days or dates)
Net Increase (Decrease) from previous Change Orders No. ____ to ____: \$ _____	Net change from previous Change Orders No. ____ to ____: Substantial Completion: _____ Ready for final payment: _____ (days)
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____ (days or dates)
Net increase (decrease) of this Change Order: \$ _____	Net increase (decrease) this Change Order: Substantial Completion: _____ Ready for final payment: _____ (days)
Contract Price with all approved Change Orders: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____ (days or dates)

RECOMMENDED:
 By: _____
 ENGINEER(Authorized Signature)

APPROVED:
 By: _____
 OWNER(Authorized Signature)

ACCEPTED:
 By: _____
 CONTRACTOR(Authorized Signature)

Date: _____

Date: _____

Date: _____

Conditions of the Contract

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN COUNCIL OF ENGINEERING COMPANIES

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by



The Associated General Contractors of America



Construction Specifications Institute

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National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314

American Council of Engineering Companies
1015 15th Street, N.W., Washington, DC 20005

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

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GENERAL CONDITIONS

ARTICLE I - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity*-- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain

administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times

but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents, or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or

c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement

or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or

responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work

(unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's

sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

- a. reviewing and checking all such information and data,
- b. locating all Underground Facilities shown or indicated in the Contract Documents,
- c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
- d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will

promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. Reports and Drawings: Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to

entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified

in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection

from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any

deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract

Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or

received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract

Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual

or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Draw-

ings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*: Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents

with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or

disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or

arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed 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 Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and

properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep

Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show

partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall

promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and

Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have

resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall

be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an

allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

- a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

- b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

- c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted

by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 Delays

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to

be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications .

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress

payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent

inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

- a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
- c. there are other items entitling Owner to a set-off against the amount recommended; or
- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial

Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals

that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations

under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and , will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, 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 to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance

with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be

governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. C-700, 2002 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.02 COPIES OF DOCUMENTS

Delete the second sentence of Paragraph 2.02.A and insert the following new sentence in its place:

- A. Three (3) sets of contract drawings and specifications will be furnished to the CONTRACTOR without charge. Additional sets will be furnished upon request at the cost of reproduction. The CONTRACTOR shall keep one (1) set of approved plans and specifications on the site of the WORK. This set shall be kept current by addition of all approved changes, addenda, and amendments thereto. One set of as-built plans shall be returned to the Owner after the project is complete.

SC-2.03 COMMENCEMENT OF CONTRACT TIMES; NOTICE TO PROCEED

Delete Paragraph 2.03.A in its entirety and add the following in its place:

- A. The CONTRACT TIME will commence to run on the Effective Date of the Agreement.

ARTICLE 3 – CONTRACT AND CONTRACT DOCUMENTS

SC-3.02

Add the following new paragraph immediately after Paragraph 3.02.A.1 of the General Conditions

- a. All applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.
- b. ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

SC-4.04 UNDERGROUND FACILITIES

Add the following new paragraph immediately after Paragraph 4.04.A.2.d of the General Conditions.

3. The location of subsurface utilities is shown on the plans from information furnished by the utility owners pursuant to ORC §153.64. The CONTRACTOR shall, at least two (2) working days, excluding Saturdays, Sundays, and legal holidays, prior to construction in the area of the subsurface utility, notify the subsurface utility owner in writing, by telephone, or in person. The marking or locating shall be coordinated to stay approximately two (2) days ahead of the planned construction. The CONTRACTOR shall alert immediately the occupants of nearby premises as to any emergency that he may create or discover at or near such premises. The



CONTRACTOR shall have full responsibility for coordination of the work with owners of such underground facilities during construction, for the safety and protection thereof as provided in paragraph 6.13 and repairing any damage thereto resulting from the work, the cost of all of which will be considered as having been included in the CONTRACT PRICE, unless otherwise provided for in the Ohio Revised Code.

ARTICLE 5 – BONDS AND INSURANCE

SC-5.01 PERFORMANCE, PAYMENT, AND OTHER BONDS

Delete Paragraph 5.01.A of the General Conditions in its entirety and insert the following in its place:

- A. Simultaneously with his/her delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner. The bond shall be for 100 percent of the contract price. A Payment Bond and Performance Bond are required. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney. Under certain conditions, and within the limits of State and local laws and regulations, the Owner may waive the requirement that the Payment and Performance Bond be underwritten by a surety company and may authorize in lieu thereof, a personal bond backed by a letter of credit from a local lending institution for the full value of the Contract.

SC-5.02 LICENSED SURETIES AND INSURERS

Add the following new paragraph immediately after Paragraph 5.02.A. of the General Conditions.

- B. All BONDS shall be in the form prescribed by the CONTRACT DOCUMENTS except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department.

SC-5.03 CERTIFICATES OF INSURANCE

Delete Paragraph 5.03.A of the General Conditions in its entirety and insert the following in its place:

- A. The Contractor shall not commence work under this Contract until he has obtained all the insurance required hereunder and such insurance has been approved by the Owner, nor shall the Contractor allow any Subcontractor to commence work on his subcontract until all similar insurance required of the Subcontractor has been so obtained and approved. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder.

Delete Paragraph 5.03.B of the General Conditions in its entirety and insert the following in its place:

- B. The Contractor shall file with the Owner all Certificate(s) of Insurance as are necessary to document the insurance coverage required hereunder, subject to the approval of the Owner and receipt of any additional forms/documentation requested, prior to final execution of the Agreement Contract and issuance of the Notice to Proceed.



SC-5.04 CONTRACTOR'S LIABILITY INSURANCE

Add the following new paragraph immediately after Paragraph 5.04.B of the General Conditions.

C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Worker's Compensation and related coverages under Paragraphs 5.04.A.1 and A.2 of the General Conditions.
 - (a) State: Statutory
 - (b) Applicable Federal: Statutory
 - (c) Employer's Liability: \$1,000,000.00
2. Comprehensive General Liability Insurance under Paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody, and control of CONTRACTOR:
 - (a) General Aggregate: \$ 2,000,000.00
(except Products-Completed Operations)
 - (b) Products-Completed Operations Aggregate: \$1,000,000.00
 - (c) Personal and Advertising Injury: \$ 1,000,000.00
(Per Person/Organization)
 - (d) Each Occurrence: \$ 1,000,000.00
Bodily Injury and Property Damage
 - (e) Property Damage Liability Insurance will provide
Explosion, Collapse, and Underground Coverages,
where applicable
 - (f) Excess Liability
General Aggregate: \$ 1,000,000.00
Each Occurrence: \$ 1,000,000.00
3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions
 - (a) Bodily Injury:
Each Person: \$ 1,000,000.00
Each Occurrence: \$ 1,000,000.00
 - (b) Property Damage
(Each Accident) \$ 1,000,000.00

or

 - (c) Combined Single Limit (Bodily Injury
and Property Damage)
Each Accident \$ 2,000,000.00
4. The CONTRACTUAL LIABILITY coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:



(a) Bodily Injury:	
Each Accident:	\$ 1,000,000.00
Annual Aggregate:	\$ 1,000,000.00
(b) Property Damage	
Each Accident:	\$ 1,000,000.00
Annual Aggregate:	\$ 1,000,000.00

Delete Paragraph 5.04.A.5 of the General Conditions in its entirety and insert the following in its place:

5. Each Contractor shall maintain insurance to protect himself and the Owner, jointly, from loss incurred by fire, lightning, extended coverage hazards, vandalism, theft, explosion and malicious mischief in the full amount of the Contract and such insurance shall cover all labor and material connected with the work, including materials delivered to the site, but not yet installed.
 1. "The Company agrees that thirty (30) days prior to cancellation or reduction of the insurance afforded by this policy with respect to the Contract involved, written notice will be mailed to the Owner"
 2. The maintaining of such insurance as outlined herein shall in no way constitute a waiver of legal liability for damage to any adjoining buildings or their contents or the work and property of others on the site beyond the limits of insurance thus maintained. The Contractor shall hold the Owner free and harmless from any injury and damage resulting from the negligent or faulty performance of the Contract by the Contractor or by his/her Subcontractors.
 3. Each Contractor shall hold the Owner harmless from all payments for patents, either as royalty or otherwise, in the use of materials, methods, appliances, etc., that he may be in any way involved in or connected with any part of his work or the work of his Subcontractors.
 4. Prior to commencement of any work under Contract, the Contractor shall furnish one (1) copy of Declaration of Insurance as evidence of coverage.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

SC-6.01 SUPERVISION AND SUPERINTENDENCE

Delete Paragraphs 6.01.A and 6.01.B of the General Conditions in its entirety and insert the following in its place:

- A. The Contractor will supervise and direct the work. He will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The Supervisor shall have full authority to act on behalf of the Contractor and communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present and on the site at all times as required to perform adequate supervision and coordination of the work.
- B. The Owner and its representatives will, at all times, have access to the work. In addition, authorized representatives and agents of any participating federal or state agency shall be



permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the work and also for any inspection or testing thereof.

- C. The Contractor shall submit a proposed program of operation, showing clearly how he/she proposed to conduct the work as to bring about the completion of his/her work within the time limit specified. This program shall outline the proposed sequence of operations, the rates of progress, and the dates when his/her work will be sufficiently advanced to permit the installation of the work under other contracts, and the estimated progress payments due under the Contract. The work under this contract shall be so scheduled that as structures are completed, they can be placed into useful operation with a minimum of delay. The program shall be subject to the approval of the Owner.
- D. All construction as proposed along all Village, Township, County, State and Federal roads including storage and stockpiling of materials, is to be conducted within the limits of the public right-of-way. Bracing, sheeting and shoring shall be used to keep all construction work within the construction limits unless work agreements are secured from the adjacent property owners. It is the Contractor's responsibility to secure these work agreements, if deemed necessary. Copies of the work agreements shall be delivered to the Engineer and the Owner prior to any work beginning on the affected property.

SC-6.02 LABOR: WORKING HOURS

Add the following new paragraphs immediately following Paragraph 6.02.B:

- C. No WORK shall be done between 7:00 P.M. and 7:00 A.M. without permission of OWNER. However, EMERGENCY WORK may be done without prior permission.
- D. NIGHT WORK may be undertaken as a regular procedure with the permission of OWNER; such permission, however, may be revoked at any time by OWNER if CONTRACTOR fails to maintain adequate equipment and supervision for the proper prosecution and control of the WORK at night.

SC-6.08 PERMITS

Delete Paragraph 6.08.A of the General Conditions in its entirety and insert the following in its place:

- A. The Contractor is responsible for obtaining and paying for all necessary permits and licenses from the proper authorities. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he/she shall promptly notify the Owner in writing.

SC-6.09 LAWS AND REGULATIONS

Add the following paragraphs after Paragraph 6.09.B of the General Conditions.

- C. If CONTRACTOR observes that the specifications or drawings are at a variance with any laws or regulations, the CONTRACTOR shall give ENGINEER prompt written notice thereof and any necessary changes will be authorized by one of the methods indicated in Paragraph 3.04



- D. OWNER or OWNER's authorized representative shall, at all reasonable times, be provided with access to and a right to inspect all SITES and facilities involved in the PROJECT and access to and a right to examine or audit any and all books, documents, and records, financial or otherwise, relating to the PROJECT or to ensure compliance with ORC Chapter 164, and, further, OWNER shall be provided with such information as requested and required to document compliance with ORC Chapter 164.
- E. Payments to CONTRACTOR will be made by OWNER and the State of Ohio based on their respective share of the PROJECT cost. OWNER shall not be responsible for any additional costs to CONTRACTOR resulting from delays in receiving payments from the State.

SC-6.13 SAFETY AND PROTECTION

Delete Paragraph 6.13.B of the General Conditions in its entirety and insert the following in its place:

- B. The Contractor shall comply with the safety standards provisions of applicable laws, building and construction codes and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, No. 75, Saturday, April 17, 1971. The Chapter shall also comply with Chapter 4109 of the Ohio Revised Code prohibiting the Employment of Minors in Occupations Hazardous or Detrimental to their health.
 - 1. The Contractor shall maintain at his/her office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured at the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

SC-6.20 INDEMNIFICATION

Add the following paragraph after Paragraph 6.20.A of the General Conditions:

- 1. The Contractor shall indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of Subcontractor's laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the work. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fail to do so, the Owner, may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor, his Surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the Contract Documents by the Owner to the Contractor and the Owner shall not be liable to the contractor for any such payments in good faith.



ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION

SC-9.02 VISITS TO SITE

Delete Paragraph 9.02.A in its entirety and insert the following new paragraph in its place:

- A. ENGINEER may make visits to the SITE as OWNER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR’s executed WORK. Based on information obtained during such visits and observations, ENGINEER, at the request and benefit of OWNER, may determine, in general, if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS. ENGINEER will not be required to make exhaustive or continuous inspections on the SITE to check the quality or quantity of the WORK. ENGINEER’s efforts will be directed toward providing for OWNER a greater degree of confidence that the completed WORK will conform generally to the CONTRACT DOCUMENTS. On the basis of such visits and observations, ENGINEER will advise OWNER of the progress of the WORK and will endeavor to guard OWNER against defective WORK.

ARTICLE 10 – CHANGES IN THE WORK: CLAIMS

SC-10.01 AUTHORIZED CHANGES IN THE WORK

Delete Paragraph 10.01.A of the General Conditions in its entirety and insert the following in its place:

- A. The Owner reserves the right to make, at any time during the progress of the work, such increases or decreases in quantities and such alterations in details of work as may be deemed necessary or desirable. Such increases or decreases and alterations shall not invalidate the contractor nor release the surety, and the Contractor agrees to perform the work as altered, the same as if it had been a part of the original contract.
1. Authorized alterations in plans or quantities of work involving work not covered by unit prices in the proposal shall be paid for as stipulated in the change order authorizing such work.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-11.03 UNIT PRICE WORK

Add the following paragraph after Paragraph 11.03.D.3:

4. The term "significant" is defined as follows:
if the decrease in quantity of any unit price Contract Item exceeds 25 percent of the estimated quantity, and the total of all such adjustments for all Contract Items is more than \$400, then after the determination of final quantities, the Engineer will adjust the unit prices for the affected Contract item by multiplying the bid unit price by the factor obtained from the following table:

% Decrease	Factor		% Decrease	Factor
25 to 28	1.02		61	1.14
29 to 32	1.03		62	1.15
33 to 35	1.04		63	1.16
36 to 38	1.05		64	1.17
39 to 41	1.06		65	1.18
42 to 44	1.07		66	1.19
45 to 47	1.08		67	1.20
48 to 50	1.09		68	1.21
51 to 53	1.10		69	1.22
54 to 56	1.11		70	1.23
57 to 59	1.12		71	1.24
60	1.13		72 and over	1.25

Add the following paragraph after Paragraph 11.03.D:

- E. CONTRACTOR's Unit Price Bid shall include incidentals. All work to be done by CONTRACTOR, specified or mentioned in the plans or specifications as well as any minor details of WORK not specifically mentioned but obviously necessary for the proper completion of WORK, shall be considered as incidental and as being a part of, and included in, the CONTRACT. The CONTRACTOR will not be entitled to any extra or additional compensation for the same.

ARTICLE 14 – PAYMENTS TO THE CONTRACTOR AND COMPLETION

SC-14.04 SUBSTANTIAL COMPLETION

Add the following paragraph after Paragraph 14.04.E

- F. The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one year from the date of Substantial Completion. The Contractor warrants and guarantees for a period of one year from the date of Substantial Completion of the improvement that it is free from all defects due to faulty materials or workmanship, and the Contractor shall promptly make corrections as may be necessary by reason of such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make repairs, adjustments, or other work which may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Contract Bond shall remain in full force and effect through the guarantee period.
- G. When the work, including that performed by Subcontractors, is completed, the site shall be cleaned of all rubbish and debris caused by the construction. All sheds or other temporary structures, surplus materials, and equipment shall be removed and the project left in a neat and presentable condition.



ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

SC-15.03 OWNER MAY TERMINATE FOR CONVENIENCE

Delete Paragraph 15.03.A of the General Conditions in its entirety and insert the following in its place:

- A. After ten (10) days from delivery of a Written Notice to the Contractor, the Owner may, without cause and without prejudice to any other right or remedy, elect to terminate the Contract. In such case, the Contractor shall be paid for all work executed and any expense sustained plus reasonable profit, unless such termination was due to the act or conduct of the Contractor.

ARTICLE 16 – DISPUTE RESOLUTION

Replace Article 16 with the following:

- A. This contract shall be construed under and in accordance with the laws of the State of Ohio.
- B. CONTRACTOR shall informally attempt to resolve all complaints brought to its attention regarding its performance of the Work. If a dispute arises, despite the best efforts of CONTRACTOR to resolve same, the parties shall use the following alternative dispute resolution (“ADR”) procedure in good faith prior to pursuing other available judicial or non-judicial remedies:
 - 1. Written notice specifying the nature of the dispute shall be provided to the adverse party, and CONTRACTOR and OWNER shall each appoint an ADR representative. Each ADR representative shall have good decision-making authority regarding the dispute and shall endeavor in good faith to resolve the dispute within 30 days after the receipt of said notice.
 - 2. If the ADR representatives have not succeeded in resolving the dispute within 30 days after the receipt of said notice, the ADR representatives shall then jointly submit the matter for mediation through the Ashtabula County Joint Court Mediation Project, with any cost thereof to be split equally between OWNER and CONTRACTOR.
 - 3. Nothing contained in this contract shall preclude either party from seeking interim or provisional relief from the court (including without limitation a temporary restraining order, preliminary injunction, or other interim relief) prior to or during the ADR process if said action is or becomes necessary to protect its interests pursuant to this contract.
- C. OWNER and CONTRACTOR consent to venue in Ashtabula County, so that the Ashtabula County Common Pleas Court shall have exclusive and original jurisdiction to adjudicate any dispute, whether for interim or provisional relief, or because no satisfactory resolution of same can be achieved as a result of said ADR process.



Prevailing Wage



WAGE RATES

The wages to be paid for legal day's work to laborers, workers, or mechanics engaged in work under this Agreement at the site of the Project in trade or occupation listed shall not be less than the wage set, as predetermined by the Bureau of Employment Services of the State of Ohio, in accordance with Section 4115.04 of the Ohio Revised Code.

Prevailing wage rates apply on this project and therefore, it is required that the Contractor list the specific classification for their employee regarding this project when submitting certified payroll reports.

The Contractor and Subcontractors are required to file with the contracting public authority upon completion of the Project and prior to final payment, an affidavit stating he has complied with Chapter 4115 of the Ohio Revised Code.



Prevailing Wage Guide For Contractors

Prevailing Wage Contractor Responsibilities

This is a summary of prevailing wage contractors' responsibilities. For more detailed information please refer to Chapter 4115 of the Ohio Revised Code

General Information

Ohio's prevailing wage laws apply to all public improvements financed in whole or in part by public funds when the total overall project cost is fairly estimated to be more than \$250,000 for new construction or \$75,000 for reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting.

Ohio's prevailing wage laws apply to all public improvements financed in whole or in part by public funds when the total overall project cost is fairly estimated to be more than \$98,974 for new construction that involves roads, streets, alleys, sewers, ditches and other works connected to road or bridge construction or \$29,653 for reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting of a public improvement that involves roads, streets, alleys, sewers, ditches and other works connected to road or bridge construction.

- a) Thresholds are to be adjusted biennially by the Administrator of Ohio Department of Commerce, Division of Industrial Compliance and Labor, Bureau of Wage and Hour Administration
- b) Biennial adjustments to threshold levels are made according to the Construction Cost Index for Commercial Construction published by McGraw Hill's Engineering News Record.

Penalties for Violation

Violators are to be assessed the wages owed, plus a penalty of 100% of the wages owed.

Intentional Violations

If an intentional violation is determined to have occurred, the contractor is prohibited from contracting directly or indirectly with any public authority for the construction of a public improvement. Intentional violation means "a willful, knowing, or deliberate disregard for any provision" of the prevailing wage law and includes but is not limited to the following actions:

- Intentional failure to submit payroll reports as required or knowingly submitting false or erroneous reports.
- Intentional misclassification of employees for the purpose of reducing wages.
- Intentional misclassification of employees as independent contractors or as apprentices.
- Intentional failure to pay the prevailing wage.
- Intentional failure to comply with the allowable ratio of apprentices to skilled workers as required by the regulations established by Ohio Department of Commerce, Division of Industrial Compliance and Labor, Bureau of Wage and Hour Administration.
- Intentionally employing an officer, of a contractor or subcontractor, that is known to be prohibited from contracting, directly or indirectly, with a public authority.

Responsibilities

1. Pay the prevailing rate of wages as shown in the wage rate schedules issued by the Ohio Department of Commerce, Division of Industrial Compliance and Labor, Bureau of Wage and Hour Administration, for the classification of work being performed.
 - a. Wage rate schedules include all modifications, corrections, escalations, or reductions to wage rates issued for the project.
 - b. Overtime must be paid at time and one-half the employee's base hourly rate. Fringe benefits are paid at straight time rate for all hours including overtime.
 - c. Prevailing wages must be paid in full without any deduction for food, lodging, transportation, use of tools, etc., unless the employee has voluntarily consented to these deductions in writing. The public authority and the Director of Ohio Department of Commerce, Division of Industrial Compliance and Labor, Bureau of Wage and Hour Administration - must approve these deductions as fair and reasonable. Consent and approval must be obtained before starting the project.
2. Use of Apprentices and Helpers cannot exceed the ratios permitted in the wage rate schedules.
 - a. Apprentices must be registered with the U.S. Department of Labor Bureau of Apprenticeship and Training.
 - b. Contractors must provide the Prevailing Wage Coordinator a copy of the Apprenticeship Agreement for each apprentice on the project.
3. Keep full and accurate payroll records available for inspection by any authorized representative of the Ohio Department of Commerce, Division of Industrial Compliance, Bureau of Wage and Hour Administration or the contracting public authority, including the Prevailing Wage Coordinator. Records should include but are not limited to:
 - a. Timecards, time sheets, daily work records, etc.
 - b. Payroll ledger\journals and canceled checks\check register.
 - c. Fringe benefit records must include program, address, account number, & canceled checks.
 - d. Records made in connection with the public improvement must not be removed from the State for one year following the completion of the project.
 - e. Out-of-State Corporations must submit to the Ohio Secretary of State the full name and address of their Statutory Agent in Ohio.
4. Prevailing Wage Rate Schedule **must** be posted on the job site where it is accessible to all employees.
5. Prior to submitting the initial payroll report, supply the Prevailing Wage Coordinator with your project dates to schedule reporting of your payrolls.
6. Supply the Prevailing Wage Coordinator a list of all subcontractors including the name, address, and telephone number for each.

- a. **Contractors are responsible for their subcontractors' compliance with requirements of Chapter 4115 of the Ohio Revised Code.**
7. Before employees start work on the project, supply them with written notification of their job classification, prevailing wage rate, fringe benefit amounts, and the name of the Prevailing Wage Coordinator for the project. A copy of the completed signed notification should be submitted to Prevailing Wage Coordinator.
8. Supply all subcontractors with the Prevailing Wage Rates and changes.
9. Submit certified payrolls within two (2) weeks after the initial pay period. Payrolls must include the following information:
 - a. Employees' names, addresses, and social security numbers.
 - i. Corporate officers/owners/partners and any salaried personnel who do physical work on the project are considered employees. All rate and reporting requirements are applicable to these individuals.
 - b. Employees' work classification.
 - i. Be specific about the laborers and/or operators (Group)
 - ii. For all apprentices, show level/year and percent of journeyman's rate
 - c. Hours worked on the project for each employee.
 - i. The number of hours worked in each day and the total number of hours worked each week.
 - d. Hourly rate for each employee.
 - i. The minimum rate paid must be the wage rate for the appropriate classification. The Department's Wage Rate Schedule sets this rate.
 - ii. All overtime worked is to be paid at time and one-half for all hours worked more than forty (40) per week.
 - e. Where fringes are paid into a bona fide plan instead of cash, list each benefit and amount per hour paid to program for each employee.
 - i. When the amount contributed to the fringe benefit plan and the total number of hours worked by the employee on all projects for the year are documented, the hourly amount is calculated by dividing the total contribution of the employer by the total number of hours worked by the employee.
 - ii. When the amount contributed to the fringe benefit is documented but not the total hours worked, the hourly amount is calculated by **dividing the total yearly contribution by 2080.**
 - f. Gross amount earned on all projects during the pay period.
 - g. Total deductions from employee's wages.
 - h. Net amount paid.



10. The reports shall be certified by the contractor, subcontractor, or duly appointed agent stating that the payroll is correct and complete; and that the wage rates shown are not less than those required by the O.R.C. 4115.

11. Provide a Final Affidavit to the Prevailing Wage Coordinator upon the completion of the project.



Prevailing Wage Notification to Employee

4115.05: ...the contractor or subcontractor shall furnish each employee **NOT covered by a collective bargaining agreement** written notification of the job classification to which the employee is assigned, the prevailing wage determined to be applicable to that classification, separated into the hourly rate of pay and the fringe payments, and the identity of the prevailing wage coordinator appointed by the public authority. The contractor or subcontractor shall furnish the same notification to each affected employee every time the job classification of the employee is changed.

Project Name:	Project Number:
Contractor:	
Project Location:	

Prevailing Wage Coordinator	Employee
Public Authority:	Name:
Name of PWC:	Street:
Street:	City:
City:	State/Zip:
State:	Phone Number:
Zip:	Email:
Phone:	Last 4 Digits of SS#:

You will be performing work on this project that falls under these classifications. You will be paid the appropriate rate for the type of work you are performing.

Classification:	Prevailing Wage Rate Total Package:	Minus your fringe benefits*:	Your hourly base rate and overtime:
			/
			/
			/
			/
			/
			/

Hourly fringe benefits paid on your behalf by this company (Yearly amount the **company pays** divided by 2080):

Fringe	Amount	Fringe	Amount
Health Insurance		Vacation	
Life Pension		Holiday	
Pension		Sick Pay	
Other (Specify):		Training	
Other (Specify):		Total Hourly Fringes *	

Contractor's Signature:	Date:
Employee's Signature:	Date:

INSTRUCTIONS FOR PREPARING CERTIFIED PAYROLL REPORTS

General: Contractors and subcontractors are required by law to submit certified payroll reports for work on projects covered by Ohio's Prevailing Wage Law. This form meets the reporting requirements established by Ohio Revised Code Chapter 4115. The use of this form is not mandatory; employers may submit their own forms if all the required information is included. This form may be reproduced.

Certified Payroll Heading:

Employer name and address: Company's full name and address – indicate if the company is a subcontractor

Subcontractor: Check and list the name of the General Contractor or Prime

Project: Name and location of the project, including county

Contracting Public Authority: Name and address of the contracting public authority – owner of the project

Week Ending: Month, day, and year for last day of reporting period

Payroll Number: Indicates first, second, third, etc. payroll filed by the company for the project

Page Indicator: number of pages included in the report

Project Number: Determined by the public authority – if there is no number, leave blank.

Payroll Information by column:

1. Employee Name, Address and Social Security number: This information must be provided for all employees that perform physical labor on the project. The Social Security number is required; the last four digits may be permitted by the public authority. Corporate officers, partners, and salaried employees are considered employees and must be paid the prevailing rate. Individual sole proprietors do not have to pay themselves prevailing rate but must report their hours on the project.
2. Work Class: List classification of work performed by employee. If unsure of work classification, consult the Ohio Department of Commerce-Division of Industrial Compliance & Labor-Bureau of Wage and Hour Administration. Employees working more than one classification should have separate line entries for each classification. Indicate what year/level for Apprentices. Be specific when using laborer and operator classifications; for example, Backhoe Operator or Asphalt Laborer or by "Group".
3. Hours Worked, Day & Date: In the first row of column 3, enter days of the company's pay period for example; M T W TH F S S. The second row is for the date that corresponds with each day for the pay period. In the employee information section, enter the number of hours worked on the prevailing wage project and which day the hours were worked. Separate rows are labeled for (ST) straight time hours and (OT) overtime hours. All hours worked after 40, must be paid at the appropriate overtime rate.
4. Project Total Hours: Total the hours entered for pay period.
5. Base Rate: Enter actual rate per hour paid to the employee. The overtime hourly rate is time and one-half the base rate listed in the prevailing wage schedule plus fringe benefits at straight time rate. The prevailing wage schedule lists the base rate plus fringe benefit amounts. These

amounts added together equal the total prevailing wage rate. Employers must pay this total amount in one of three ways.

- a. Total rate may be paid in entirety in the base rate to the employee; in which case, the cash designation will be checked for fringe benefits.
 - b. Total rate may be paid as listed in prevailing wage rate schedule with total fringe amounts paid approved plans.
 - c. Total rate may be paid with a combination of base rate and fringe payments to approved plans in amounts other than those listed in schedule.
6. Project Gross: Enter total gross wages earned on the project for straight time and overtime. Project hours "X" base rate should equal project gross.
7. Fringes: If fringe benefits are paid in the hourly base rate, indicate this by marking the **Cash** space. If fringe benefits are paid to approved plans as listed in the prevailing wage rate schedule, mark the space **Approved Plans**. If fringe benefits are paid partially in the base rate and partially to approved plans, mark the space **Cash & Approved Plans**. List the hourly amount paid to approved plans for each fringe. If payments are not made on a per hour basis, **calculate the hourly fringe credit by dividing the yearly employer contribution by** the lesser of: hours actually worked in the year (these must be documented) or **2080**.
 - a. Fringe benefits include: **Employer's share** of health insurance, life insurance, retirement plan, bonus/profit sharing, sick pay, holiday pay, personal leave, vacation, and education/training programs.
 - b. If unsure of a possible fringe benefit, contact the Ohio Department of Commerce - Division of Industrial Compliance - Bureau of Wage and Hour Administration.
8. Total Hours All Jobs: Total all hours worked during the pay period including non-prevailing wage jobs.
9. Total Gross All Jobs: Gross amount earned in the pay period for all hours worked.
10. Self-explanatory.
11. Self-explanatory.



Certified Payroll Report

Report for:

Company:¹⁾

Address:

City, State, Zip

Phone No:

☐ Check if Subcontractor¹⁾

If Sub, GC/Prime Contractor Name:

Public Authority (Owner):

Contract No:

Project Name & Location:

Payroll No:

Week Ending:

Sheet:²⁾ of

1. Employee Name, Address, & SS# (Last 4 digits if permitted)	2. Work Class ³⁾	3. Prevailing Wage Project Hours Worked - Day & Date				4. Total Hours	5. Base Rate	6. Project Gross	Fringes: ☐ Cash ☐ Cash & Approved Plans	Approved Plans				Weekly Payroll Amount				
										Fringe Rate Your Company Pays Per Hour				8. Total Hrs for all Jobs	9. Total Gross on All Jobs	10. Total Deductions	11. Net Pay on All Jobs	
		H&W	Pens	Vac	Hol					Other	Total							
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1) By signing below, I certify that: (1) I pay, or supervise the payment of the employees shown above; (2) during the pay period reported on this form, all hours worked on this project have been paid at the appropriate prevailing wage rate for the class of work done; (3) the fringe benefits have been paid as indicated above; (4) no rebates or deductions have been or will be made, directly or indirectly from the total wages earned, other than permissible deductions as defined in ORC Chapter 4115; and (5) apprentices are registered with the U.S. Dept. of Labor, Bureau of Apprenticeship and Training. I understand that the willful falsification of any of the above statements may subject the Contractor or Subcontractor to civil or criminal prosecution.

Type or Print Name and Title

Signature

Date



CORRECTED FORMS CAN BE HANDWRITTEN

Difference in base rate & corrected base rate if applicable.

The net paid will be the total of difference paid and the total hours being corrected. Provide Check # in margin.

Difference in fringes & corrected fringes if applicable.

Put the period that is being corrected, i.e.: Oct 26 to Dec 19, not individual weekly dates

Date _____ My signature on this form signifies that I pay, or supervise the payment of the employees shown above. I am certifying: 1) That during the pay period reported on this form, all hours worked on this project have been paid at the appropriate prevailing wage rate for the class of work done. 2) That the fringe benefits have been paid as indicated above. 3) That no rebates or deductions have been or will be made, directly or indirectly from the total wages earned, other than permissible deductions as defined in the Ohio Revised Code Chapter 4115.

4) That apprentices are registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training. The willful falsification of any of the above statements may subject the contractor or subcontractor to civil or criminal prosecution.

Signature

Send cover letter stating what happened, with a signed letter from the employee acknowledging that they were underpaid, received payment, check or transaction number.

**FINAL AFFIDAVIT OF COMPLIANCE
PREVAILING WAGES**

I, _____, _____ do hereby certify
(Name of person signing affidavit) (Title)

that the wages paid to all employees of: _____
(Company name)

for all hours worked on project: _____
(Project name)

(Project location)

During the period from _____ to _____ are in compliance with
(Project Dates)

Prevailing Wage requirements of Chapter 4115 of the Ohio Revised Code. I further certify that no rebates or deductions have been or will be made, directly or indirectly, from any wages paid in connection with this project, other than those provided by law.

(Signature of Officer or Agent)

(Print Name of Officer or Agent)

Sworn to and subscribed in my presence this _____ day of _____, 20_____.

(Notary Public)

The above affidavit must be executed and sworn to by the officer or agent of the contractor or subcontractor who supervises the payment of employees. This affidavit must be submitted to the owner (public authority) before the surety is released or final payment due under the terms of the contract is made.



Specifications

SECTION 01100 - SUMMARY

PART1 GENERAL

1.01 PROJECT

- A. ACDES New Office Building
- B. Owner's Name: Ashtabula County Commissioners
- C. Engineer's Name: F&B Engineering, Inc.
- D. The Project consists of the construction of a new office .
 - 1. Work to include all associated site work and infrastructure involved in the construction of a new 5100 square foot building including site clearing and grading.
 - 2. Work to include all associated mechanical, plumbing and electrical work as detailed on Drawings.
 - 3. Scope to include all work shown and detailed on Drawings and in Specifications.

1.02 DESCRIPTION OF WORK

- A. Work shall include the furnishing of all labor, material, equipment, and tools for the construction as set forth in these documents.
- B. Applicable Codes: "Ohio Building Codes" (latest edition), NFPA, and ADAAG as administered and modified by local building department having authority in the area of the work in addition to any other code authority.
- C. Requirements of Regulatory: Contractor shall apply for and obtain all permits, inspections required by local laws, rules and regulations. Fees for such permits and inspections shall be paid by the Contractor unless noted by the owner.
- D. Plumbing: Provide all plumbing as shown and detailed on Drawings. Note that plumbing Contractor to be responsible for reviewing entire set of Construction Documents and responsible for any plumbing work shown throughout the set.
- E. HVAC: Provide all HVAC as shown and detailed on Drawings. Note that HVAC contractor to be responsible for reviewing entire set of Construction Documents and responsible for any HVAC work shown throughout the set
- F. Electrical Power and Lighting: Provide all electrical work as shown and detailed on Drawings. Note that electrical contractor to be responsible for reviewing entire set of Construction Documents and responsible for any electrical work shown throughout the set.
- G. Telecommunications: Contractor to provide as shown and detailed on Drawings to accommodate new telecommunications by Owner.

1.03 WORK SEQUENCE

- A. Contractors to be aware that the schedule set forth is mandatory. Therefore Contractor to provide necessary manpower to meet dates.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

EOND OF SECTION

SECTION 01200 - PRICE AND PAYMENT PROCEDURES

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED SECTIONS

- A. Document 00700 - General Conditions and Supplementary Conditions

1.03 SCHEDULE OF VALUES

- A. Submit a printed schedule on Contractor's standard form or electronic media printouts. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- B. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization.
- C. Include in each line item, the amount of Allowances specified in this section.
- D. Revise schedule to list approved Change Orders, with each Application for Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Monthly.
- B. Present required information in typewritten form.
- C. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.
 - 10. Retainage.
- D. Execute certification by signature of authorized officer.
- E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- F. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- G. Submit three copies of each Application for Payment.
- H. Include the following with the application:
 - 1. Transmittal letter as specified for Submittals in Section 01300.
 - 2. Construction progress schedule, revised and current as specified in Section 01300.
 - 3. Partial release of liens from major Subcontractors and vendors.
 - 4. Affidavits attesting to off-site stored products.
- I. When Engineer requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by the Conditions of the Contract by issuing supplemental instructions.

- C. Construction Change Directive: Engineer may Issue a document, signed by Owner, instructing Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change in Work.
- CI. Proposal Request: Engineer may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 10 days.
- CII. Contractor may propose a change by submitting a request for change to Engineer describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01600.
- CIII. Computation of Change in Contract Amount:
 - 1. For change requested by Engineer for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Engineer
 - 3. For change ordered by Engineer without a quotation from Contractor, the amount will be determined by Engineer based on the Contractor's substantiation of costs as specified for Time and Material work.
- CIV. Substantiation of Costs: Provide full information required for evaluation.
 - 1. On request, provide following data:
 - a. Quantities of products, labor, and equipment.
 - b. Insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- CV. Execution of Change Orders: Engineer will Issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- CVI. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- CVII. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust limes for other items of work affected by the change, and resubmit.
- CVIII. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01700.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01300 - ADMINISTRATIVE REQUIREMENTS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.
- D. Progress photographs.
- E. Coordination drawings.
- F. Submittals for review, information, and project closeout.
- G. Number of copies of submittals.
- H. Submittal procedures.

1.02 RELATED SECTIONS

- A. Document 00700 - General Conditions: Dates for applications for payment.
- B. Section 01780 - Closeout Submittals: Project record documents.

PART 2 NOT USED

PART 3 EXECUTION

2.01 PRECONSTRUCTION MEETING

- A. Engineer will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Engineer.
 - 3. Contractor. (including job superintendant)
 - 4. All applicable major sub-contractors - REQUIRED.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing the parties to contact.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.

2.02 PROGRESS MEETINGS

- A. Job Meetings will be held bi-weekly at a time to be determined.
- B. General Contractor to make arrangements for meetings and location at the job site.
- C. Engineer will prepare agenda with copies for participants, preside at meetings.
- D. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, and Engineer
- E. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems which impede planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.

2.03 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Submit to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01780 – CLOSEOUT SUBMITTALS.

2.04 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Engineer knowledge as contract administrator or for Owner. No action will be taken.

2.05 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
 - 1. Project record documents including record as built and construction records.
 - 2. Notebook
 - 3. Operation and maintenance data.
 - 4. Warranties.
 - 5. Bonds.
 - 6. Other types as indicated.

2.05 NUMBER OF COPIES OF SUBMITTALS

- A. Documents for Review:
 - 1. Small Size Sheets, Not Larger than 8-1/2 x 11 inches: Submit the number of copies which the Contractor requires, plus two copies which will be retained by Engineer
 - 2. Larger Sheets, Not Larger than 36 x 48 inches: Submit the number of opaque reproductions which Contractor requires, plus two copies which will be retained by Engineer
- B. Documents for Information: Submit two copies.
- C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed.
- D. Submit one extra of submittals for information.
- E. Samples: Submit the number specified in individual specification sections; one of which will be retained by Engineer
 - 1. After review, produce duplicates.
 - 2. Retained samples will not be returned to Contractor unless specifically so stated.

2.06 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Contractor's submittal form.
- B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- C. Apply Contractor's stamp, signed or initialed certifying that review, approval, 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.
- D. Schedule submittals to expedite the Project, and coordinate submission of related items.
- E. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- F. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- G. Provide space for Contractor and Engineer review stamps.

- H. When revised for resubmission, identify all changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- J. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary telephone service.
- C. Temporary sanitary facilities.
- D. Temporary Controls: Barriers, enclosures, and fencing.
- E. Security requirements.
- F. Vehicular access and parking.
- G. Waste removal facilities and services.
- H. Field offices.

1.02 TEMPORARY UTILITIES

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TELEPHONE SERVICE

- A. Provide, maintain, and pay for telephone service to field office at time of project mobilization.
- B. Provide, maintain and pay for facsimile service and a dedicated telephone line to field office at time of project mobilization.

1.04 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. New permanent facilities located at basement level may be used during construction operations.
- C. Maintain daily in clean and sanitary condition.
- D. At end of construction, return facilities to same or better condition as originally found.

1.05 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
- C. Protect existing Village Hall from damage, and do not impede daily operations for the Owner.

1.06 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures as required to meet project schedule.
- B. Contractor to be responsible for providing any exterior enclosure necessary to protect work based on seasonal work.

1.07 SECURITY

- A. Provide security and facilities to protect Work from unauthorized entry, vandalism, or theft.

1.08 VEHICULAR ACCESS AND PARKING

- A. Coordinate access and haul routes with governing authorities.
- B. Provide and maintain access to fire hydrants, free of obstructions.
- C. Provide means of removing mud from vehicle wheels before entering streets.
- D. Existing on-site roads may be used for construction traffic.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.09 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

- B. Provide containers with lids. Remove trash from site periodically.

1.10 FIELD OFFICES

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.
- B. Provide space for Project meetings within area of construction, with table and chairs to accommodate 12 persons when possible.
- C. Locate offices a minimum distance of 30 feet from new structures accessible to the parking area. Provide temporary walk between office and new building.
- D. Once new building is weather tight and temperature maintained by either temporary means or by building systems, the field office and meeting room can be relocated to within the structure.

1.13 REMOVAL OF CONTROLS

- A. Remove temporary materials, prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition.
- D. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01600 - PRODUCT REQUIREMENTS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations and procedures.
- E. Spare parts and maintenance materials.

1.02 RELATED SECTIONS

- A. Section 01400 - Quality Requirements: Product quality monitoring.

1.03 REFERENCES

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2023.

1.04 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Agreement.
 - 2. For products specified only by reference standards, list applicable reference standards.
- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.
- D. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Do not use products having any of the following characteristics:
 - 1. Made using or containing CFC's or HCFC's.
- C. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 2. Result in less construction waste.
- D. Urea-Formaldehyde Prohibition:
 - 1. Overall Project Requirement: Provide composite wood and agrifiber products having no added urea-formaldehyde resins.
 - 2. Require each installer to certify compliance and submit product data showing product content.
 - 3. Specific Product Categories: Comply with limitations specified elsewhere.
- E. Adhesives and Joint Sealants:
 - 1. Definition: This provision applies to gunnable, trowelable, and liquid-applied adhesives, sealants, and sealant primers used anywhere on the interior of the building inside the weather barrier, including duct sealers.
 - 2. Require each installer to certify compliance and submit product data showing product content.
 - 3. Specific Product Categories: Comply with limitations specified elsewhere.
- F. Provide interchangeable components of the same manufacture for components being replaced.
- G. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.

- H. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions:
- D. Submit a request for substitution for any manufacturer not named.

2.03 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
- B. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- D. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- E. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the
 - 4. Work to be complete with no additional cost to Owner.
 - 5. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 6. Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.
- F. Substitution Submittal Procedure:
 - 1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. Engineer will notify Contractor in writing of decision to accept or reject request.

3.03 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.

- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- H. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01700 EXECUTION REQUIREMENTS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Cutting and patching.
- D. Surveying for laying out the work.
- E. Cleaning and protection.
- F. Starting of systems and equipment.
- G. Demonstration and instruction of Owner personnel.
- H. Closeout procedures, except payment procedures.

1.02 RELATED SECTIONS

- A. Section 01300 - Administrative Requirements: Submittals procedures.
- B. Section 01400 - Quality Requirements: Testing and inspection procedures.
- C. Section 01500 - Temporary Facilities and Controls: Temporary exterior enclosures.

1.03 SUBMITTALS

- A. See Section 01300 - Administrative Requirements. for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request. submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor. that the elevations and locations of the work are in conformance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration which affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance. or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

- A. For survey work, employ a land surveyor registered in Ohio and acceptable to Engineer
Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

1.05 PROJECT CONDITIONS

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- D. Dust Control: Execute work by methods to minimize raising dust from construction operations.
- E. Provide positive means to prevent air-borne dust from dispersing into atmosphere.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- H. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

- I. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
- J. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.06 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Bid Documents to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01600.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and Substrate surfaces are acceptable for subsequent work.
- B. Start of work means acceptance of existing conditions.
- C. Verify that demolition is complete in alterations areas and areas are ready for installation of new work.
- D. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- E. Examine and verify specific conditions described in individual specification sections.
- F. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- G. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- H. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during culling and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of culling or patching means acceptance of existing conditions.

3.02 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.

- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Verify locations of structural reference points prior to starting work.
- B. Promptly notify Engineer of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Control datum for survey is that indicated on Drawings.
- E. Protect structural reference points prior to starting site work: preserve permanent reference points during construction.
- F. Promptly report to Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.
- H. Utilize recognized engineering survey practices.
- I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- J. Establish elevations, lines and levels. Locate and layout by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, and ground floor elevations.
- K. Periodically verify layouts by same means.
- L. Maintain a complete and accurate log of control and survey work as it progresses.
- M. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 CUTTING AND PATCHING

- A. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.
- B. Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- C. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- D. Restore work with new products in accordance with requirements of Contract Documents.
- E. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- F. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- G. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.
- H. Patch or replace surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. Repair substrate prior to patching finish. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.07 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.09 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Engineer and Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.
- E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner personnel in detail to explain all aspects of operation and maintenance.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Test, adjust, and balance HVAC systems in accordance with the specifications.

3.12 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in Contractor's Notice of Substantial Completion.
- C. Notify Engineer when work is considered ready for Substantial Completion.
- D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Engineer review.
- E. Correct items of work listed in executed Certificates of Substantial Completion.
- F. Notify Engineer when work is considered finally complete.
- G. Complete items of work determined by Engineer final inspection.

3.14 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections for 1 year from date of Substantial Completion.
- B. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- D. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete formwork.
- B. Elevated concrete slabs.
- C. Floors and slabs on grade.
- D. Concrete foundation walls.
- E. Concrete reinforcement.
- F. Joint devices associated with concrete work.
- G. Non-shrink Grout
- H. Miscellaneous concrete elements, including equipment pads, light pole bases, and manholes.
- I. Concrete curing.

1.02 REFERENCES

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2005.
- C. ACI 302.1 R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004.
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
- E. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 1999.
- F. ACI306R - Cold Weather Concreting; American Concrete Institute International; 1988 (Reapproved 2002).
- G. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001.
- H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2005.
- I. ASTM A 185/A 185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2006.
- J. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2006.
- K. ASTM C 33 - Standard Specification for Concrete Aggregates; 2003.
- L. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2005.
- M. ASTM C 143/C 143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2005a.
- N. ASTM C 150 - Standard Specification for Portland Cement; 2005.
- O. ASTM C 171 - Standard Specification for Sheet Materials for Curing Concrete; 2003.
- P. ASTM C 230 - Standard Specification for grout
- Q. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete; 2005a.
- R. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2005.
- S. S. ASTM C 881/C 881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2002.
- T. T. ASTM C 1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 1999.
- U. ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2005.
- V. ASTM D 994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type); 1998 (Reapproved 2003).
- W. W. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004.
- X. ASTM D 3963/10 3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy Coated Reinforcing Steel Bars; 2001.
- Y. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 1997 (Reapproved 2004).
- Z. COE CRD-C 513 - COE Specifications for Rubber Water stop; Corps of Engineers; 1974.

1.03 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
- C. Samples: Submit samples of under slab vapor retarder to be used.
- D. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction for concrete accessories.
- E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.04 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.
- B. Acquire grout from same source and aggregate from same source for entire project.
- C. Follow recommendations of ACI 305R when concreting during hot weather.
- D. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
 - 2. Form Facing for Exposed Finish Concrete: Steel.
 - 3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 4. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT

- A. Reinforcing Steel: ASTM A 615/A 615M Grade 60 unless noted otherwise on Drawings.
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement: ASTM A 185/A 185M. plain type.
 - 1. Form: Coiled Rolls.
 - 2. Mesh Size and Wire Gage: As indicated on drawings.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Provide plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C 150, Type 1- Normal Portland type.
- B. Grout - Non-shrink
- C. Minimum compressive strength in 28 days =10,000 psi
- D. Grout shall be stiff as per ASTM C-230
- E. Fine and Coarse Aggregates: ASTM C 33.
- F. Fly Ash: ASTM C 618, Class C or F.
- G. Water. Clean and not detrimental to concrete.

2.04 CHEMICAL ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Chemical Admixtures: ASTM C 494/C 494M, Type A - Water Reducing, Type C - Accelerating, and Type G - Water Reducing, High Range and Retarding.

- C. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

2.05 ACCESSORY MATERIALS

- A. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.
- B. Bonding Agent: ASTM C 1059, Type II acrylic non-redispersable type.
- C. Under slab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E 1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single ply polyethylene is prohibited.
- D. Non-Shrink Grout: ASTM C 1107; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 28 Days: 10,000 psi.
 - 2. Product: Masters Builders or equal.
- E. Moisture-Retaining Cover: ASTM C 171; regular curing paper, white curing paper, clear polyethylene, white polyethylene, or white burlap-polyethylene sheet.

2.06 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-dispersible acrylic latex, complying with ASTM C 1059 Type 11.
- B. Epoxy Bonding System: Complying with ASTM C 881/C 881M and of Type required for specific application.
- C. Water stops: Rubber type, COE CRD-C 513.
- D. Joint Filler. Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D 1751, 1/4 inch thick and 4 inches deep; tongue and groove profile.
- E. Joint Filler. Compressible asphalt mastic with felt facers, complying with ASTM 0994, 1/4 inch thick and 4 inches deep.
- F. Sealant and Primer: As specified in Section 07900.

2.07 CONCRETE MIX DESIGN

- A. Normal Weight Concrete:
 - 1. 4000 psi at 28 – days, when tested in accordance with ASTM C 39/C 39M at 28 days.
 - 2. Water/Cement ratio (w/c), 0.45 maximum.
 - 3. Minimum 6.5 bags cement (611 pounds) per cubic yard
 - 4. 6 percent air +/- 1 percent.
 - 5. Maximum water-soluble chloride ion content 0.10 percent.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION AND PLACING OF GROUT

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- E. Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends. Cover with sand to depth shown on drawings; repair damaged vapor retarder before covering.

3.03 INSTALLING REINFORCEMENT

- A. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D 3963/D 3963M.
- B. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

- C. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
- D. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1 R.
- C. Notify Engineer not less than 24 hours prior to commencement of placement operations.
- D. Ensure inserts, water stops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- E. Repair under slab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- F. Separate slabs on grade from vertical surfaces with joint filler.
- G. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- H. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface.
- I. Install joint devices in accordance with manufacturer's instructions.
- J. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- K. Install joint device anchors for expansion joint assemblies. Maintain correct position to allow joint cover to be flush with floor and wall finish.
- L. Apply sealants in joint devices in accordance with Section 07900.
- M. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- N. Place concrete continuously between predetermined expansion, control, and construction joints.
- O. Do not interrupt successive placement; do not permit cold joints to occur.
- P. Saw cut joints within 24 hours after placing. Use 3/16 inch thick blade, cut into 1/4 depth of slab thickness.
- Q. Where not otherwise shown on Drawings, provide control joints in slabs on grade at column centerlines and at the following maximum spacing:
 - 1. Slabs less than 5" thick - 12' c-c
 - 2. Slabs 5" - 8" thick - 16' c-c
 - 3. Topping slabs - 8' c-c
- R. Screed floors level, maintaining surface flatness of maximum 1/4 inch in 10 ft.

3.05 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
 - 2. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.
- D. Concrete Slabs: Finish to requirements of ACI 302.1 R, and as follows:
 - a. Wood float surfaces that will receive quarry tile, ceramic tile, and terrazzo with full bed setting system.
 - b. Steel trowel surfaces that will receive carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
 - c. Steel trowel surfaces that will be left exposed.
- E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.06 CURING AND PROTECTION

- A. Comply with requirements of ACI 308. Immediately after placement, protect grout from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain grout with minimal moisture loss at relatively constant temperature for period

necessary for hydration of grout and hardening of grout

1. Normal concrete: Not less than 7 days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
 1. Start initial curing as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, or saturated burlap.
 2. Begin final curing after initial curing but before surface is dry.
 - a. Moisture-retaining cover: Seal in place with waterproof tape or adhesive.

3.07 FIELD QUALITY CONTROL

- A. Provide free access to concrete operations at project site and cooperate with appointed firm.
- B. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- C. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- D. Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
- E. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- F. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C 143/C 143M.

3.08 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing Engineer and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Engineer. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

END OF SECTION

SECTION 03390 – CONCRETE SEALER/ HARDENER

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Application of water soluble. Inorganic hardening, sealing and dust proofing product for treatment of uncovered concrete floor surfaces in all areas where concrete is to remain exposed whether called to be sealed or not. Note that this also includes exterior concrete under canopy, sidewalks, and pads.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCES

- A. ACI 308: Standard Specification for Curing Concrete

1.3 SUBMITTALS

- A. Comply with Section 01330 - Administrative Requirements.
- B. Product Data: Submit manufacturer's technical bulletins and MSDS on each product.
- C. Quality Control Submittals:
 - 1. Provide protection plan of surrounding areas and non-cementations surfaces.

1.4 QUALITY ASSURANCE

- A. Comply with Section 01400 - Quality Requirements
- B. Qualifications:
 - 1. Applicator. Experience in application of similar systems and products on projects of similar size and scope.
 - a. Successful completion of a minimum of 3 projects of similar size and complexity to specified Work.
 - 2. Manufacturer. Minimum 15 years of experience in manufacturing of surface hardener.
 - 3. A mock up or test installation is recommended.
- C. Pre-Installation Meetings: Conduct meeting at Project site prior to installation
- D. Schedule and convene meeting a minimum of 1 week prior to commencing Work of this Section.
 - 1. Review requirements for application, including surface preparation specified under other Sections, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details, installation procedures, testing and inspection procedures, protection, and repair.
 - 2. Discuss procedures for protecting adjacent finished Work.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Comply with Section 01600 - Product Requirements
Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store tightly sealed materials off ground and away from moisture, direct sunlight, extreme heat, and freezing temperatures.
- D. Store in unopened packaging in clean, dry environment protected from sunlight at 40 degrees F (4 degrees C) to 85 degrees F (29 degrees C). Prevent material from freezing.

1.6 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Ensure that substrate surface and ambient air temperature are minimum of 35 degrees F (minus 7 degrees C) and rising at application time and remain above 35 degrees F (minus 7 degrees C) for at least 24 hours after application. Ensure that frost or frozen surfaces are thawed and dry.
 - 2. Do not place surface hardener in areas without roof cover.
 - 3. Allow surfaces to attain temperature and conditions specified before proceeding with surface hardener application.

4. Perform Work of this Section in well-ventilated areas.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products from the following manufacturer:
 1. BASF
- B. Substitutions: Comply with Section 01600 - Product Requirements
- C. Specifications and Drawings are based on manufacturer's proprietary literature from Degussa Building
- D. Systems. Other manufacturers shall comply with minimum levels of material, color selection, and detailing
- E. indicated in Specifications or on Drawings. Engineer will be sole judge of appropriateness of substitutions.

2.2 MATERIALS

- A. Water soluble sealer/densities, that When applied in accordance with manufacturers application recommendations will produce a dense surface resistant to abrasion, moisture, tire marking and provides added gloss to the floor finish.
 1. VOC Content: None
 2. Color: Clear.
 3. Acceptable Product: "Kure N Harden" by BASF.

PART 3-EXECUTION

3.1 EXAMINATION

- A. Comply with Section 01700 - Execution Requirement

3.2 SURFACE PREPARATION:

- A. New Concrete
 1. Properly finish freshly placed concrete surfaces. Surface is ready for application when it is damp but not wet and when it can no longer be marred by foot traffic.

3.3 APPLICATION

Kure N Harden ® is not a curing compound (film forming product), but should fully saturate the concrete surface for best results. Follow manufacturer's application recommendations. Acquire and review most current manufacturers published data. Including MSDS and warranty.

- A. NEW CONCRETE (green concrete immediate application)
 1. Apply undiluted Kure N Harden® to finished, damp concrete surface with low pressure sprayer after all surface water has evaporated and the surface will not be marred or damaged by application procedures. Keep the treated surface area wet with product for thirty (30) minutes by spraying additional product and/or brooming excess material from low areas. Do not allow dry spots to occur. Prevent any drying of surface for twenty (20)-thirty (30) minutes.
 2. As Kure N Harden® begins to penetrate and react, mist the surface lightly with clean water and brush, broom or power scrub with non-aggressive brush or pad into surface to aid penetration/reaction.
 3. After thirty (30) minutes, depending on temperature and humidity, Kure N Harden® will begin to gel. Keep all treated surfaces moist, and continue brushing/scrubbing action for 5-15 minutes. At this stage, the surface can be slippery. Use caution.
 4. Flush the surface with water and squeegee the surface to remove excess material and all impurities present on the surface. Rinse with generous amounts of water to enhance product performance. Finish with a damp mop. Kure N Harden® is environmentally safe and may be flushed directly into drains.
 5. DO NOT allow Kure N Harden® residue to dry on the surface. Any product allowed to dry on

the surface may cause White residue that can be difficult to remove.

B. Existing Concrete (Cured)

1. For best results, apply to concrete cured seven (7) days or longer.
2. Assure surface is clean and free of contaminants (waxes, curing membrane, oil, etc).
3. Apply undiluted Kure N Harden® to saturation level by sprayer, broom or squeegee.
4. Keep the treated surface area wet with product for thirty (30) minutes by spraying additional product and/or brooming excess material from low areas.
5. Do not allow dry spots to occur. Prevent any drying of surface for twenty (20)-thirty (30) minutes. Use brooms or floor scrubber with non-aggressive pad or brushes to aid in penetration.
6. After twenty (20)-thirty (30) minutes, depending on temperature and humidity, Kure N Harden® will begin to gel. Keep all treated surfaces moist, and continue brushing/scrubbing action for 5-15 minutes. At this stage, the surface can be slippery. Use caution.
7. Flush the surface with water and squeegee the surface to remove excess material and all impurities present on the surface. Rinse with generous amounts of water to enhance product performance. Finish with a damp mop. Kure N Harden ® is environmentally safe and may be flushed directly into drains.
8. DO NOT allow Kure N Harden® residue to dry on the surface. Any product allowed to dry on the surface may cause white residue that can be difficult to remove.

C. Drying Time

1. Kure N Harden® penetrates in approximately thirty (30) -sixty (60) minutes depending on temperature and humidity. Allow each application to penetrate thoroughly before proceeding with additional applications.
2. Allow twenty four hours after application before opening to wheeled traffic.
3. Following drying, gloss development can be enhanced by buffing and or additional floor scrubbing.

3.4 CLEANING

- A. Clean tools immediately after use with clean water.
- B. Clean up and properly dispose of debris remaining on Project site related to application.
- C. Remove temporary coverings and protection from adjacent Work areas.

END OF SECTION

SECTION 03505 - SELF-LEVELING UNDERLAYMENT

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Liquid applied, cementations self-leveling floor underlayment.

1.02 RELATED SECTIONS

- A. Section 01700 - Execution Requirements:

1.03 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, environmental limitations, and installation instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable code for combustibility or flame spread requirements.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of underlayment materials in the required fire rated assembly.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not install underlayment until floor penetrations and peripheral work are complete.
- B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.
- C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cementations Underlayment:
 - 1. Ardex Engineered Cements Inc: www.ardex.com.
 - 2. Dayton Superior Corporation: www.daytonsuperior.com.
 - 3. Dependable Chemical Co., Inc: www.floorprep.com.
 - 4. Substitutions: See Section 01600 - Product Requirements.

2.02 MATERIALS

- A. Cementations Underlayment: Blended cement mix, which when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
 - 1. Compressive Strength: Minimum 4000 psi after 28 days, tested per ASTM C 109/C 109M.
 - 2. Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C 348.
 - 3. Density: Maximum 125 lb. /cu ft.
 - 4. Final Set Time: 1-1/2 to 2 hours, maximum.
 - 5. Thickness: As required.
 - 6. Surface Burning Characteristics: Flame spread/Smoke developed index of % in accordance with ASTM E 84.
- B. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.
- C. Water: Potable and not detrimental to underlayment mix materials.
- D. Primer: Manufacturer's recommended type.
- E. Joint and Crack Filler: Latex based filler, as recommended by manufacturer.

2.03 MIXING

- A. Site mix materials in accordance with manufacturer's instructions.

- B. Add aggregate for areas where thickness will exceed 1/2 inch. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.
- C. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum bi-products, or other compounds detrimental to underlayment material bond to substrate.

3.02 PREPARATION

- A. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.
- B. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- C. Vacuum clean surfaces.
- D. Prime substrate in accordance with manufacturer's instructions. Allow to dry.
- E. Close floor openings.

3.03 APPLICATION

- A. Install underlayment in accordance with manufacturer's instructions. Note that all areas scheduled for new flooring to receive a minimum of a skim coat or as required by flooring manufacturer
- B. Install underlayment in accordance with manufacturer's instructions and in compliance with flooring manufacturer's requirements. Note that all areas other than areas scheduled for ceramic tile to receive a minimum of a skim coat and tapered as necessary up allow finish resilient flooring to be flush with ceramic tile. Also note that underlayment is to be used to create floor slope to drains in shower area to drain water to floor drains.
- C. Pump or pour material onto substrate. Do not retemper or add water.
 - 1. Pump, move, and screed while the material is still highly flowable.
 - 2. Be careful not to create cold joints.
 - 3. Wear spiked shoes while working in the wet material to avoid leaving marks.
- D. Place to thickness required or to achieve slope
- E. If a fine, feathered edge is desired, steel trowel the edge after initial set, but before it is completely hard.

3.04 CURING

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.

3.05 APPLICATION TOLERANCE

- A. Top Surface: Level to 1/8 inch in 10ft.

3.06 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field inspection and testing, as specified in Section 01400.
- B. Placed Material: Agency will inspect and test for conformance to specification requirements.

3.07 PROTECTION OF FINISHED WORK

- A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.
- B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION

SECTION 04065 - MORTAR AND MASONRY GROUT

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Mortar for masonry.
- B. Grout for masonry.

1.02 RELATED SECTIONS

- A. Section 04610 - Unit Masonry Assemblies: Installation of mortar and grout.
- B. Section 04611 - Single-Wythe Unit Masonry: Installation of mortar and grout.
- C. Section 04615 - Cavity Walls: Installation of mortar and grout.
- D. Section 04616 - Masonry Veneer. Installation of mortar.
- E. Section 04652 - Stone Masonry Veneer. Installation of mortar.
- F. Section 06110 - Steel Doors and Frames: Grouting steel door frames installed in masonry.

1.03 REFERENCES

- A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements For Masonry Structures; American Concrete Institute International; 2005.
- B. ACI 530.1/ASCE 6/TMS 602 - Specification for Masonry Structures; American Concrete Institute International; 2005.
- C. ASTM C 91 - Standard Specification for Masonry Cement; 2005.
- D. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete; 2005.
- E. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar; 2004.
- F. ASTM C 150 - Standard Specification for Portland Cement; 2005.
- G. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006.
- H. ASTM C 270 - Standard Specification for Mortar for Unit Masonry; 2005a.
- I. ASTM C 476 - Standard Specification for Grout for Masonry; 2002.
- J. ASTM C 780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2006.
- K. ASTM C 1019 - Standard Test Method for Sampling and Testing Grout; 2005.
- L. ASTM C 1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength; 2005b.
- M. ASTM C 1142 - Standard Specification for Extended Life Mortar for Unit Masonry; 1995 (Reapproved 2001).
- N. ASTM C 1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2003b.
- O. ASTM E 518 - Standard Test Methods for Flexural Bond Strength of Masonry; 2003.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C 270 is to be used. Also include required environmental conditions and admixture limitations.
- C. Samples: Submit two samples of mortar, illustrating mortar color and color range.

1.05 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Masonry Cement ASTM C 91, Type N.
 - 1. Exposed Mortar color to be 'Brixment', Color to be selected from standard range of colors. Provide Sample for all brick and stone veneer.
 - 2. Substitutions: See Section 01600 • Product Requirements.
- B. Portland Cement ASTM C 150, Type I • Normal; color as required to produce approved color sample.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Mortar Aggregate: ASTM C 144.
- E. Water. Clean and potable.
- F. Bonding Agent Latex type.

2.02 MORTAR MIXES

- A. Ready Mixed Mortar: ASTM C 1142, Type RM.
- B. Mortar for Unit Masonry: ASTM C 270-86, Property Specification.
 - 1. Engineered masonry: Type S.
 - 2. Masonry below grade and in contact with earth: Type M.
 - 3. Exterior, load bearing masonry: Type N.
 - 4. Exterior, non-load bearing masonry: Type N.
 - 5. Interior, load bearing masonry: Type N.
 - 6. Interior, non-load bearing masonry: Type O.
 - 7. Pointing mortar: Type N with maximum 2 percent ammonium stearate or calcium stearate per cement weight.
- C. Stain Resistant Pointing Mortar: One part Portland cement, 1/8 part hydrated lime, and two parts graded (80 mesh) aggregate, proportioned by volume. Add aluminum tristearate, calcium stearate, or ammonium stearate equal to 2 percent of Portland cement by weight.
- D. Colored Mortar: Proportion selected pigments and other ingredients to match Engineer sample, without exceeding manufacture(s recommended pigment-to-cement ratio.

2.03 MORTAR MIXING

- A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C 270 and in quantities needed for immediate use.
- B. Maintain sand uniformly damp immediately before the mixing process.
- C. Do not use anti-freeze compounds to lower the freezing point of mortar.
- D. If water is lost by evaporation, re-temper only within two hours of mixing.
- E. Use mortar within two hours after mixing at temperatures of 90 degrees F, or two-and-one-half hours at temperatures under 40 degrees F.

2.04 GROUT MIXES

- A. Bond Beams and Lintels: 2 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
 - 1. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - 2. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- B. Engineered Masonry: 2,500 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
 - 1. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - 2. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.05 GROUT MIXING

- A. Mix grout in accordance with ASTM C 94/C 94M.
- B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C 476 for fine and coarse grout.
- C. Add admixtures in accordance with manufacture's instructions; mix uniformly.
- D. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 PREPARATION

- A. Apply bonding agent to existing concrete surfaces.
- B. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

3.02 INSTALLATION

- A. Install mortar and grout to requirements of section(s) in which masonry is specified.
- B. Work grout into masonry cores and cavities to eliminate voids.
- C. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.
- D. Do not displace reinforcement while placing grout.
- E. Remove excess mortar from grout spaces.

3.03 GROUTING

- A. Use either high-lift or low-lift grouting techniques, at Contractor's option, subject to other limitations of contract documents.
- B. Perform grouting by means of high-lift technique, except in locations that mandate use of low-lift grouting technique.
- C. Low-Lift Grouting:
 - 1. Limit height of pours to 12 inches.
 - 2. Limit height of masonry to 16 inches above each pour.
 - 3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
 - 4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.
- D. High-Lift Grouting:
 - 1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.
 - 2. Brick: Limit pours to maximum 12 feet in height and 25 feet horizontally.
 - 3. Hollow Masonry: Limit lifts to maximum 4 feet and pours to maximum height of 24 feet.
 - 4. Place grout for spanning elements in single, continuous pour.

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field tests, in accordance with provisions of Section 01400.
- B. Test and evaluate mortar in accordance with ASTM C 780 procedures.
 - 1. Test with same frequency as specified for masonry units.
- C. Test and evaluate grout in accordance with ASTM C 1019 procedures.
- D. Prism Tests: Test masonry and mortar panels for compressive strength in accordance with ASTM C 1314, and for flexural bond strength in accordance with ASTM C 1072 or ASTM E518; perform tests and evaluate results as specified in individual masonry sections.

END OF SECTION

SECTION 04810 - UNIT MASONRY ASSEMBLIES

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete Block.
- B. Concrete Brick.
- C. Common Brick.
- D. Reinforcement and Anchorage.
- E. Flashings.
- F. Accessories.

1.02 RELATED SECTIONS

- A. Section 04065 - Mortar and Masonry Grout.
- B. Section 05500 - Metal Fabrications: Loose steel lintels.
- C. Section 06100 - Rough Carpentry: Nailing strips built into masonry.
- D. Section 07900 - Joint Sealers: Backing rod and sealant at control and expansion joints.

1.03 REFERENCES

- A. ACI 530/ASCE 5ITMS 402 - Building Code Requirements for Masonry Structures; American Concrete Institute International; 2005.
- B. ACI 530.1/ASCE 6ITMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2005.
- C. ASTM A 821A 82M - Standard Specification for Steel Wire, Plain. for Concrete Reinforcement; 2005a.
- D. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.
- E. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2006.
- F. ASTM A 653/A 653M - Standard Specification for Steel Sheet. Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2005a.
- G. ASTM C 55 - Standard Specification for Concrete Brick; 2003.
- H. ASTM C 62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale); 2005.
- I. ASTM C 67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile; 2005.
- J. ASTM C 90 - Standard Specification for Load bearing Concrete Masonry Units; 2006.
- K. ASTM C 129 - Standard Specification for Non-load bearing Concrete Masonry Units; 2005.
- L. ASTM C 216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2005a.
- M. ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2001.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar.
- C. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.
- D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/ASCE 5ITMS 402 and ACI 530.1/ASCE 6ITMS 602, except where exceeded by requirements of the contract documents.
 - 1. Maintain one copy of each document on project site.

1.06 MOCK-UP

- A. Construct a masonry wall with brick and stone as a mock-up panel sized 8 feet long by 6 feet high, which includes mortar and accessories and structural backup.
- B. Locate where directed.

- C. Mock-up may remain as part of the Work.

1.07 PRE-INSTALLATION MEETING

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depths as required for specific locations.
 - 2. Fire Rating: Provide equivalent thickness as required for rating as noted on drawings to achieve rating.
 - 3. Load-Bearing Units: ASTM C 90, normal weight.
 - a. Hollow block, as indicated.
 - b. Exposed faces: Manufacturer's standard color and texture.
 - 4. Non-Load bearing Units: ASTM C 216.
 - a. Hollow block, as indicated.
 - b. lightweight.
 - 5. Concrete Brick: ASTM C 55.
 - a. Grade N, cored, normal weight.

2.02 MORTAR AND GROUT MATERIALS

- A. Mortar and grout: As specified in Section 04065.

2.03 REINFORCEMENT AND ANCHORAGE

- A. Manufacturers of Joint Reinforcement:
 - 1. Dur-O-Wal: www.dur-o-wal.com.
 - 2. Hohmann & Barnard, Inc: www.h-b.com.
 - 3. Masonry Reinforcing Corporation of America: www.wirebond.com.
 - 4. Substitutions: See Section 01600 - Product Requirements.
- B. Reinforcing Steel: ASTM A 615/A 615M Grade 40 (280) deformed billet bars; galvanized.
- C. Single Wythe Joint Reinforcement: Truss type; ASTM A 82/A 82M steel wire, hot dip galvanized after fabrication to ASTM A 153/A 153M, Class B; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
 - 1. Manufacturers:
 - a. Dur-o-Wal: www.dur-o-wal.com.
 - b. Hohmann & Barnard, Inc: www.h-b.com.
 - c. Masonry Reinforcing Corporation of America.
 - d. Substitutions: See Section 01600 - Product Requirements.
- D. Multiple Wythe Joint Reinforcement: Truss type; fabricated with moisture drip; ASTM A 82/A 82M steel wire, hot dip galvanized after fabrication to ASTM A 153/153M, Class B; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
- E. Adjustable Multiple Wythe Joint Reinforcement: Truss type with adjustable ties or tabs spaced at 16 in on center and fabricated with moisture drip; ASTM A 82/A 82M steel wire, hot dip galvanized after fabrication to ASTM A 153/153M, Class B; 0.1875 inch side rods with 0.1463 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.

1. Vertical adjustment: Not less than 2 inches.
 2. Seismic Feature: Provide lip, hook, or clip on extended leg of wall ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.
 3. Insulation Clips: Provide clips at tabs or ties designed to secure insulation against outer face of inner wythe of masonry.
 4. Manufacturers:
 - a. Dur-o-Wal: www.dur-o-wal.com.
 - b. Hohmann & Barnard, Inc: www.h-b.com.
 - c. Masonry Reinforcing Corporation of America.
 - d. Substitutions: See Section 01600 - Product Requirements.
- F. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.
1. Manufacturers:
 - a. Dur-o-Wal: www.dur-o-wal.com.
 - b. Heckmann Building Products, Inc: www.heckmannbuildingprods.com.
 - c. Hohmann & Barnard, Inc: www.h-b.com.
 - d. Substitutions: See Section 01600 - Product Requirements.
- G. Masonry Veneer Anchors: 2-piece adjustable anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Anchoring system to be Pos-i-tie system by Heckmann Building Products Inc., (800) 621-4140 www.heckmannbuildingprods.com
 2. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
 3. Wire ties: triangular shape, 0.1875 inch thick.
 4. Vertical adjustment Not less than 2 inches.

2.04 FLASHINGS

- A. Rubberized Asphalt Flashing: Self-adhering polymer-modified asphalt sheet complying with ASTM D 1970; minimum 0.030 inch total thickness; with cross-linked polyethylene top and bottom surfaces.
- B. Galvanized Steel: ASTM A 653/A 653M, with G90/Z275 coating, 24 gage total thickness.
- C. Lap Sealant Butyl type as specified in Section 07900.

2.05 ACCESSORIES

- A. Preformed Control Joints: Solid rubber or neoprene material. Provide with corner and tee accessories, fused joints.
 1. Manufacturers:
 - a. Dur-O-Wal: www.dur-o-wal.com.
 - b. Heckmann Building Products, Inc: www.heckmannbuildingprods.com.
 - c. Hohmann & Barnard, Inc: www.h-b.com.
 - d. Masonry Reinforcing Corporation of America: www.wirebond.com.
 - e. Substitutions: See Section 01600 - Product Requirements.
- B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; maximum lengths available.
 1. Manufacturers:
 - a. Dur-Q-Wal: www.dur-o-wal.com.
 - b. Hohmann & Barnard, Inc: www.h-b.com.
 - c. Masonry Reinforcing Corporation of America: www.wirebond.com.
 - d. Substitutions: See Section 01600 - Product Requirements.
- C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
 1. Mortar Diverter: Panels designed for installation at flashing locations.
 - a. Manufacturers:

- 1) Advanced Building Products Inc: www.advancedflashing.com.
 - 2) Mortar Net USA, Ltd: www.mortamet.com.
 - 3) Substitutions: See Section 01600 - Product Requirements.
- D. Weeps: Polyethylene tubing.
1. Manufacturers:
 - a. Dur-Q-Wal: www.dur-owal.com.
 - b. Heckmann Building Products, Inc: www.heckmannbuildingprods.com.
 - c. Hohmann & Bamard, Inc: www.h-b.com.
 - d. Masonry Reinforcing Corporation of America; Product__: www.wirebond.com.
 - e. Substitutions: See Section 01600 - Product Requirements.
- E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Head and bed joints to be nominal 3/8" thick with variation up to 5/8" thick to adjust coursing and to minimize cutting at openings providing such variation is gradual to minimize visual contrast in widths of adjacent joints.
- D. Concrete Masonry Units:
 1. Bond: Running.
 2. Coursing: One unit and one mortar joint to equal 8 inches.
 3. Mortar Joints: Concave.
- E. Brick Units:
 1. Bond: Running.
 2. Coursing: Three units and three mortar joints to equal 8 inches.
 3. Mortar Joints: Concave.

3.04 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering comers of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Interlock intersections and external comers.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit comers or edges.
- H. Isolate masonry partitions from vertical structural framing members with a control joint.
- I. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.05 WEEPS/CAVITY VENTS

- A. Install weeps in veneer and cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.
- B. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by

- D. manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.06 CAVITY MORTAR CONTROL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.07 REINFORCEMENT AND ANCHORAGE - GENERAL

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.

3.08 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHER MASONRY

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.

3.09 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 36 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
- F. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

3.10 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of openings.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 24 inches vertically.
- E. Reinforce stack bonded unit joint comers and intersections with strap anchors 16 inches on center.

3.11 REINFORCEMENT AND ANCHORAGES • MULTIPLE WYTHER UNIT MASONRY

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 24 inches vertically.

3.12 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
- B. If not indicated on Drawings, or unless otherwise indicated on Drawings, locate metal flashing

where drips are required such as window heads, soffits and other locations where masonry does not occur below flashing. Also install metal flashing at other locations where drips are indicated on Drawings. Install composite flashing where drips are not required and not indicated on Drawings such as at ledge angles, at bottoms of cavities and under window sills.

1. Extend flashings full width at such interruptions and at least 6 inches into adjacent masonry or turn up at least 6 inches to form watertight pan at non-masonry construction.
 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- C. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.
- D. Extend plastic and laminated flashings to within 1/4 inch of exterior face of masonry.

3.13 GROUTED COMPONENTS

- A. Lap splices minimum 24 bar diameters.
- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- C. Place and consolidate grout fill without displacing reinforcing.

3.14 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control and expansion joints.
- B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
- C. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- D. Construct control joints in concrete masonry minimum 3/8" wide.
- E. Construct expansion joints in face brick minimum 1/2" wide
- F. Provide slip plane material as required.
- G. Unless otherwise indicated on Drawings, locate control joints in concrete masonry and expansion joints in brick 30'-0" apart at the following locations:
1. Near corners.
 2. At building expansion joints
 3. At piers, columns, changes in wall height of adjacent portions of walls, and at changes in wall thickness.
- H. Extend control joints from footing to top of wall at exterior walls, and from bottom to top in interior walls.

3.15 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

3.16 TOLERANCES

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- E. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.
- F. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.17 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or filling masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.18 FIELD QUALITY CONTROL

- D. An independent testing agency will perform field quality control tests, as specified in Section 01400.

3.19 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution. Prevent run-down of cleaning materials onto adjacent glass and other surfaces. If run down occurs, clean immediately, do not allow solution to stand or dry.

3.20 PROTECTION OF FINISHED WORK

- A. Without damaging completed work, provide protective boards at exposed external comers which are subject to damage by construction activities.

END OF SECTION

SECTION 06067 - HIGH PRESSURE DECORATIVE LAMINATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. High pressure decorative laminate for vertical and horizontal surfaces of cabinets, and countertops.

1.02 REFERENCES

- A. ANSI A161.2 - Performance Standards for Fabricated High Pressure Decorative Countertops; 1998.

1.03 SUBMITTALS

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers as noted on drawings:
 - 1. Nevamar
 - 2. Wilsonart
 - a. Substitutions: See Section 01600 - Product Requirements.

2.02 MATERIALS

- A. High Pressure Decorative Laminates: Complying with NEMA LD 3, of grades and thicknesses as indicated.
 - 1. Colors, Patterns, and Finishes: As indicated on drawings.
- B. High-Pressure Decorative Laminate for Vertical Surfaces: NEVAMAR(R) Armored Protection(tm) Laminated Plastic Vertical Forming Grade VF-3 (VGP):
 - 1. Thickness: 0.028 plus/minus 0.004 inch.
- C. High-Pressure Decorative Laminate for Other Horizontal Surfaces: NEVAMAR(R) Armored Protection(tm) Laminated Plastic Horizontal Grade H-5 (HGS):
 - 1. Thickness: 0.048 plus/minus 0.005 inch.

2.03 FABRICATION

- A. Bond plastic laminate to core material using adhesives and techniques recommended by adhesive manufacturer and ANSI A161 .2.
- B. Take care that moisture imbalance does not exist between plastic laminate and substrate before fabrication.
- C. Provide minimum radius of 1/8 inch at inside corners of cut-outs; file edges smooth to prevent stress cracking.
- D. Saw, drill, edge file, sand, and rout plastic laminate with decorative side up to prevent cracking or chipping of laminate surface.
 - 1. Use carbide tipped cutting edges on saws, drills, and routers.
 - 2. Drill plastic laminate with a wood backing to prevent "breakout" at bottom of drilled holes.
 - 3. Cut curved edges slightly oversize and finish by sanding, filing, or routing for smooth edges.

PART 3 EXECUTION

3.01 INSTALLATION OF FABRICATED UNITS

END OF SECTION

SECTION 06100 - ROUGH CARPENTRY

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Non-structural dimension lumber framing.
- B. Rough opening framing for doors, windows, and roof openings.
- C. Sheathing.
- D. Roof-mounted curbs.
- E. Roofing nailers.
- F. Preservative treated wood materials.
- G. Fire retardant treated wood materials.
- H. Miscellaneous framing and sheathing.
- I. Communications and electrical room mounting boards.
- J. Wood nailers and curbs for roofing and items installed on roof.
- K. Concealed wood blocking, nailers, and supports.
- L. Miscellaneous wood nailers, furring, and grounds.

1.02 REFERENCES

- A. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.
- B. ASTM D 2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 1994 (Reapproved 2004).
- C. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2005.
- D. AWP A C2 - Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes; American Wood-Preservers' Association; 2002.
- E. AWP A C9 - Plywood - Preservative Treatment by Pressure Processes; American Wood-Preservers' Association; 2003.
- F. AWP A C20 - Structural Lumber - Fire Retardant Treatment by Pressure Processes; American Wood-Preservers' Association; 2002.
- G. AWP A C27 - Plywood - Fire-Retardant Treatment by Pressure Processes; American Wood-Preservers' Association ; 2002.
- H. H. AWP A U1 - Use Category System: User Specification for Treated Wood; American Wood-Preservers' Association; 2006.
- I. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.03 SUBMITTALS

- A. See Section 01300 -Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials.

1.04 QUALITY ASSURANCE

- A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
- B. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWP A standards.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Douglas Fir-Larch, unless otherwise indicated.

2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.
- B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER

- A. Sizes: Nominal sizes as indicated on drawings
- B. Moisture Content: S-dry or MC19.
- C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 1. Lumber: S4S, No. 2 or Standard Grade.
 2. Boards: Standard or No. 3.
- D. Miscellaneous Blocking, Furring, and Nailers:
 1. Lumber: S4S, No. 2 or Standard Grade.
 2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

- A. Roof Sheathing: APA Structural I Rated Sheathing, Exterior Exposure Class, and as follows:
 1. Structural I.
 2. Span Rating: 24/0.
 3. Thickness: 5/8", nominal
- B. Wall Sheathing: ZIP System Sheathing (See Specification Section 06165)
- C. Communications and Electrical Room Mounting Boards: Interior grade, A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84.

2.04 ACCESSORIES

- A. Fasteners and Anchors:
 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
- B. Sill Flashing: As specified in Section 07620.

2.05 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWWA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWWA standards.
- B. Fire Retardant Treatment: All lumber used for structural purpose
 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Hoover Treated Wood Products, Inc: www.frtw.com.
 - c. Osmose, Inc: www.osmose.com.
 - d. Substitutions: See Section 01600 - Product Requirements.

2. Exterior Type: AWPAs Use Category UCFB, Commodity Specification H (Treatment C20 for lumber and C27 for plywood), chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E 84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM 02898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat exposed exterior rough carpentry items, including stairways, balconies, and covered walkways
 - c. Do not use treated wood in direct contact with the ground.
 3. Interior Type A: AWPAs Use Category UCFA, Commodity Specification H (Treatment C20 for lumber and C27 for plywood), low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E 84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. All interior rough carpentry items are to be fire retardant treated.
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment:
1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Chemical Specialties, Inc: www.treatedwood.com.
 - c. Osmose, Inc: www.osmose.com.
 - d. Substitutions: See Section 01600 - Product Requirements.
- D. Fire Retardant Treatment: AWPAs Treatment C20, Exterior Type, chemical treatment pressure impregnated; capable of providing a maximum flame spread/smoke development rating of 1 _____. Provide manufactured by _____.
- E. Preservative Pressure Treatment of Lumber Above Grade: AWPAs Use Category UC3B, Commodity Specification A (Treatment C2) using waterborne preservative to 0.25 lb/cu ft retention.
1. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 2. Treat lumber in contact with roofing, flashing, or waterproofing.
 3. Treat lumber in contact with masonry or concrete.
 4. Treat lumber less than 18 inches above grade.
 5. Preservative Pressure Treatment of Plywood Above Grade: AWPAs Use Category UC2 and UC3B, Commodity Specification F (Treatment C9) using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
 - b. Treat plywood in contact with roofing, flashing, or waterproofing.
 - c. Treat plywood in contact with masonry or concrete.
 - d. Treat plywood less than 18 inches above grade.
- F. Preservative Pressure Treatment of Lumber in Contact with Soil: AWPAs Use Category UC4A, Commodity Specification A (Treatment C2) using waterborne preservative to 0.4 lb/cu ft retention.
1. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
 2. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) Exterior Type: AWPAs Use Category UCFB, Commodity Specification H (Treatment C20 for in exposed exterior applications subject to leaching.

PART 3 EXECUTION

3.01 PREPARATION

- A. Where wood framing bears on cementations foundations, install full width sill flashing continuous over top of foundation , lap ends of flashing minimum of 4 inches and seal.
- B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

- C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fire blocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities *may* be used in lieu of solid wood blocking.
- C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- F. Specifically, provide the following non-structural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets..
 - 3. Grab bars.
 - 4. Towel and bath accessories.
 - 5. Wall-mounted door stops.
 - 6. Display boards
 - 7. Wall paneling and trim.

3.04 INSTALLATION OF CONSTRUCTION PANELS

- A. Roof Sheathing: Secure panels perpendicular to framing members, with ends staggered and sheet ends over firm bearing.
 - 1. Use sheathing clips between roof framing members.
 - 2. Provide solid edge blocking between sheets.
 - 3. Nail panels to framing; staples are not permitted.
- B. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
- C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.
 - 4. Size: 48 by 96 inches, installed horizontally at ceiling height.

3.05 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.06 CLEANING

- A. Waste Disposal: Comply with the requirements of Section 01732.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.

- 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06200 - FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items, crown mould. chair rail , picture frame, and trim.
- B. Wood door frames, glazed frames.
- C. Wood hand rails
- D. Hardware and attachment accessories.

1.02 RELATED SECTIONS

- A. Section 06410 - Custom Cabinets: Shop fabricated custom cabinet work.
- B. Section 08211 - Flush Wood Doors.
- C. Section 08305 - Sliding Glass Doors: Wood patio doors.
- D. Section 08800 - Glazing: Glass and glazing of wood partitions and screens.
- E. Section 09900 - Paints and Coatings: Painting and finishing of finish carpentry items.

1.03 REFERENCES

- A. ANSI AZ08.1 - American National Standard for Particleboard; 1999.
- B. AWIIAWMAC (OSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2006, 8th Ed., Version 2.0.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide data on fire retardant treatment materials and application instructions.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, accessories, to a minimum scale of 1-1/2 inch to 1 ft.
- D. Samples: Submit two samples of finish plywood, 12 x 12 inch in size illustrating wood grain and specified finish.
- E. Samples: Submit two samples of wood trim 12 inch long including finishes.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Custom grade.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Protect work from moisture damage.

1.07 PROJECT CONDITIONS

- A. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- B. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.

PART 2 PRODUCTS

2.01 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

2.02 LUMBER MATERIALS

- A. Hardwood Lumber: oak or maple species, rotary sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

2.03 SHEET MATERIALS

- A. Hardwood Plywood: Veneer core, type of glue recommended for application; maple face species, rotary cut.
- B. Particleboard: ANSI A208.1; composed of wood chips, sawdust, or flakes of medium density.

made with waterproof resin binders; of grade to suit application; sanded faces.

2.04 PLASTIC LAMINATE MATERIALS

2.05 ADHESIVE

- A. Adhesive: Type recommended by laminate manufacturer to suit application.

2.06 FASTENERS

2.07 ACCESSORIES

- A. Wood Filler. Solvent base, tinted to match surface finish color.

2.08 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. Fit exposed sheet material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.
- C. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- D. Shop prepare and identify components for book match grain matching during site erection.
- E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site culling.
- F. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit comers and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

2.09 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw indentations.
- C. On items to receive transparent finishes, use wood filler which matches surrounding surfaces and of types recommended for applied finishes.
- D. Finish work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Section 1500:
 - 1. Transparent: Nitrocellulose lacquer (formerly TR-1).
- E. Finish work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Section 1500, System TR-2 (Transparent).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

- A. Set and secure materials and components in place. plumb and level.
- B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- C. Install prefinished paneling with full bed contact adhesive applied to substrate.

3.03 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment in accordance with manufacturer's instructions.
- B. Brush apply one coats of preservative treatment on wood in contact with cementations materials. Treat site-sawn cuts.
- C. Allow preservative to dry prior to erecting members.

3.04 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filter in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: See Section 09900.

3.05 ERECTION TOLERANCES

- A. Maximum Variation from True Position: $\frac{1}{16}$ inch.
- B. Maximum Offset from True Alignment with Abutting Materials: $\frac{1}{32}$ inch.

END OF SECTION

SECTION 06410 CUSTOM CABINETS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. All cabinets in kitchen and unit below pass through counter
- B. Cabinet hardware suitable.
- C. Factory finishing.
- D. Preparation for installing utilities.

1.02 RELATED SECTIONS

- A. Section 09900 - Paints and Coatings: Site finishing of cabinet exterior.

1.03 REFERENCES

- A. ANSI A135.4 - American National Standard for Basic Hardboard; 2004.
- B. ANSI A208.1 - American National Standard for Particleboard; 1999.
- C. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2002.
- D. AWIIAWMAC (OSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2006, 8th Ed., Version 2.0.
- E. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2003 (ANSI/BHMA A156.9).
- F. GSA CID A-A-1936 - Adhesive, Contact, Neoprene Rubber; Federal Specifications and Standards; Revision A, 1996.
- G. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; Hardwood Plywood & Veneer Association; 2004 (ANSI/HPVA HP-1).
- H. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.
- I. NHLA G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress; National Hardwood Lumber Association; 2003.
- J. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for hardware accessories.
- C. Samples: Submit actual sample items of proposed pulls and hinges, demonstrating hardware design, quality, and finish.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Custom quality, unless other quality is indicated for specific items.
- B. Perform cabinet construction in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Custom quality, unless other quality is indicated for specific items.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- D. Manufacturer Qualifications: Member in good standing of the Architectural Woodwork Institute (AWI) or the Architectural Woodwork Manufacturers Association of Canada (AWMAC) and familiar with the AWI/AWMAC QSI.
- E. Quality Certification: Provide inspection and quality certification of completed custom cabinets in accordance with AWI/AWMAC Quality Certification Program.

1.06 PRE-INSTALLATION MEETING

- A. Convene not less than one week before starting work of this section with cabinet builder to coordinate.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Protect units from moisture damage.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

2.02 LUMBER MATERIALS

- A. Softwood Lumber: NIST PS 20; Graded in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Grade III/Economy; average moisture content of 4-9 percent; species as follows:
 - 1. Exposed Surfaces: Plastic Laminate or maple veneer
 - 2. Semi-Exposed Surfaces: Plastic Laminate
 - 3. Concealed Surfaces: Plastic Laminate
- B. Hardwood Lumber: NHLA; Graded in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Grade III/Economy; average moisture content of 4-9 percent; species as follows:

2.03 PANEL MATERIALS

- A. Softwood Faced Plywood: Plastic Laminate veneer.
- B. Hardwood Faced Plywood: HPVA HP-1; graded in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, core of veneer; type of glue recommended for specific application; thickness as required; face veneer as follows:
- C. Medium Density Fiberboard (MDF): ANSI A20B.2; type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated; composed of wood fibers pressure bonded with moisture resistant adhesive to suit application; sanded faces; thickness as required.
 - 1. Use as backing for plastic laminate unless otherwise indicated.

2.04 LAMINATE MATERIALS

- A. Manufacturers: as shown on Drawings
 - 1. Formica Corporation: www.formica.com.
 - 2. Panolam Industries International, Inc\ Nevamar: www.nevamar.com.
 - 3. Wilsonart International, Inc: www.wilsonart.com.
 - 4. Substitutions: See Section 01600 - Product Requirements.
- B. Plastic Laminate: AWI P-200, 0.039 inch Post Forming quality; color and pattern as scheduled on Drawings.

2.05 ACCESSORIES

- A. Adhesive: GSA CID A-A-1936 contact adhesive.
- B. Fasteners: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel, or chrome-plated finish in exposed locations.
- D. Concealed Joint Fasteners: Threaded steel.
- E. Grommets: Standard plastic grommets for cut-outs, in color to match adjacent surface.

2.06 HARDWARE

- A. Hardware: BHMA A156.9, types as indicated for quality grade specified. Note that all hardware to be hospital grade.
- B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards, multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.
- C. Shelf Brackets: Formed steel brackets, formed for attachment with lugs; chrome finish.
- D. Drawer and Door Pulls: Extruded aluminum pull, full width of drawer, polished finish.
- E. Sliding Door Pulls: Circular shape for recessed installation, steel with chrome finish.
- F. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish.

- G. Catches: Magnetic.
- H. Drawer Slides:
 - 1. Type: Extension types as required.
 - 2. Static Load Capacity: Heavy Duty grade.
 - 3. Mounting: Side mounted.
 - 4. Stops: Integral type.
 - 5. Features: Provide self closing/stay closed type.
 - 6. Manufacturers:
 - a. Accuride International, Inc: www accuride.com.
 - b. Grass America Inc: www.grassusa.com.
 - c. Knappe & Vogt Manufacturing Company: www.kv.com.
 - d. Substitutions: See Section 01600 - Product Requirements.
- I. Hinges: Butt type, steel with polished finish suitable hospital applications.
 - 1. Manufacturers:
 - a. Grass America Inc: www.grassusa.com.
 - b. Hardware Resources: www.hardwareresources.com.
 - c. Julius Blum, Inc: www.blum.com.
 - d. Substitutions: See Section 01600 - Product Requirements.

2.07 FABRICATION

- A. Cabinet Style: As indicated for each location on Drawings
- B. Cabinet Doors and Drawer Fronts: as shown on Drawings.
- C. Drawer Construction Technique: Dovetail joints.
- D. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- E. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- F. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- G. Door and Drawer Fronts: 3/4 inch thick; flush style.
- H. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- I. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit comers and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
 - 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
 - 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- J. Mechanically fasten back splash to countertops with steel brackets at 16 inches on center.
- K. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section. Provide templates to allow for locating of other trades

3.02 INSTALLATION

- A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- B. Use fixture attachments in concealed locations for wall mounted components.
- C. Use concealed joint fasteners to align and secure adjoining cabinet units.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- E. Secure cabinets to floor using appropriate angles and anchorages.
- F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING

- A. Adjust installed work.

- B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 06415 – COUNTERTOPS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops for cabinet work and windowsills

1.02 RELATED SECTIONS

- A. Section 06410 - Custom Cabinets.

1.03 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.
- D. Contractor to be responsible for field measuring.
- E. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
- F. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- G. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.04 QUALITY ASSURANCE

- A. Fabricator Qualifications: Same fabricator as for cabinets on which tops are to be installed.
- B. Installer Qualifications: Fabricator.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOP ASSEMBLIES

- A. Plastic Laminate Countertops: High pressure decorative laminate sheet bonded to substrate.

2.02 ACCESSORY MATERIALS

- A. Plywood for Supporting Substrate: PS 1 Exterior Type, AC veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- C. Cove Molding for Top of Splashes: Rubber with semi-gloss finish and T-spline to fit between splash and wall; 1/2 inch by 1/2 inch; color as selected.
- D. Joint Sealant Mildew-resistant silicone sealant, white.

2.03 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 - 1. Join lengths of tops using best method recommended by manufacturer.
 - 2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
 - 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or

- unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
 - 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 - 2. Height: 4 inches, unless otherwise indicated.
 - C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.
 - D. Stainless Steel: Fabricate tops up to 144 inches long in one piece including nosings and back and end splashes; accurately fitted mechanical field joints in lengths over that dimension are permitted.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer; notify Engineer of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.
- C. Attach stainless steel countertops using stainless steel fasteners and clips.
- D. Seal joint between back/end splashes and vertical surfaces.
 - 1. Where indicated use rubber cove molding.
 - 2. Where applied cove molding is not indicated use specified sealant.

3.04 CLEANING AND PROTECTION

- A. Clean countertops surfaces thoroughly.
- B. Protect installed products until completion of project.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07212 - BATT AND BOARD INSULATION

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation at perimeter foundation wall, underside of floor slabs,
- B. Ball insulation and vapor retarder in exterior wall construction including Truss space.
- C. Ball insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.
- D. Batt insulation for acoustic privacy

1.02 RELATED SECTIONS

- A. Section 05400 - Cold Formed Metal Framing: Supporting construction for ball insulation.
- B. Section 06100 - Rough Carpentry: Supporting construction for batt insulation.
- C. Section 09260 - Gypsum Board Assemblies: Acoustic insulation.

1.03 REFERENCES

- A. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2005a.
- B. ASTM C 612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2004.
- C. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2001.
- D. ASTM D 2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2001.
- E. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2005.
- F. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2004.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- A. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.06 SEQUENCING

- A. Sequence work to ensure fireproofing and fire stop materials are in place before beginning work of this section.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation Under Concrete Slabs: Extruded polystyrene board.
- B. Insulation at Perimeter of Foundation: Expanded polystyrene board.
- C. Insulation of Wood Framed Walls: Batt insulation with vapor retarder.
- D. Insulation in Metal Framed Walls: Batt insulation with no vapor retarder.

2.02 BOARD INSULATION MATERIALS

- A. Expanded Polystyrene Board Insulation: ASTM C 578; with the following characteristics:
 - 1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E 84.
 - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E 84.
 - 3. Board Size: 48 x 96 inch.
 - 4. Board Edges: Square.
 - 5. Water Absorption: 4 percent by volume, maximum, when tested in accordance with ASTM

- D 2842.
- 6. Board Density: 0.7 lb/cu ft.
- 7. Thermal Conductivity (k factor) at 25 degrees F: 0.28.
- 8. Manufacturers:
 - a. AFM Corp: www.r-control.com.
 - b. Diversifoam Products: www.diversifoam.com.
 - c. Grace Construction Products: www.na.graceconstruction.com.
- 9. Substitutions: See Section 01600 - Product Requirements.
- B. Extruded Polystyrene Board Insulation: ASTM C 578, Type X; Extruded polystyrene board with either natural skin or cut cell surfaces; with the following characteristics:
 - 1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E 84.
 - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E 84.
 - 3. Board Size: 48 x 96 inch. Accommodate brick ties.
 - 4. Board Thickness: 1 inch.
 - 5. Board Edges: Tongue-and-groove.
 - 6. Thermal Conductivity (k factor) at 25 degrees F: 0.18.6
 - 7. Compressive Resistance: 15 psi.
 - 8. Board Density: 1.3 lb/cu ft.
 - 9. Water Absorption, maximum: 0.3 percent, volume.
 - 10. Surface Burning Characteristics: Flame spread/Smoke developed index of 450/25, when tested in accordance with ASTM E 84.
 - 11. Manufacturers:
 - a. Dow Chemical Co: www.dow.com.
 - b. Owens Corning Corp: www.owenscoming.com.
 - c. Pactiv Building Products: www.pactiv.com/green-guard/.
 - 12. Substitutions: See Section 01600 - Product Requirements.

2.03 BATT INSULATION MATERIALS

- A. Batt Insulation: ASTM C 665; preformed batt; friction fit, conforming to the following:
 - 1. Material: Rock or slag fiber, not glass fiber.
 - 2. Flame Spread Index: 25 or less, when tested in accordance with ASTM E 84.
 - 3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E 84.
 - 4. Surface Burning Characteristics: Flame spread index of 25 or less; smoke developed index of 450 or less, when tested in accordance with ASTM E 84.
 - 5. Combustibility: Non-combustible, when tested in accordance with ASTM E 136, except for facing, if any.
 - 6. Formaldehyde Content: Zero.
 - 7. Thermal Resistance: R -21 in walls and R-49 in attic space unless shown otherwise
 - 8. Facing: Unfaced.
 - 9. Surface Burning Characteristics: Flame spread index of 25 or less; smoke developed index of 50 or less, when tested in accordance with ASTM E 84.
 - 10. Combustibility: Except for facing, if any, non-combustible when tested in accordance with ASTM E 136.
 - 11. Manufacturers:
 - a. CertainTeed Corporation: www.certainteed.com.
 - b. Johns Manville Corporation: www.jm.com.
 - c. Owens Corning Corp: www.owenscoming.com.
 - 12. Substitutions: See Section 01600 - Product Requirements.

2.04 ACCESSORIES

- A. Sheet Vapor Retarder: Black polyethylene film for above grade application, 10 mil thick.
- B. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
- C. Nails or Staples: Steel wire; electroplated, or galvanized; type and size to suit application.
- D. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Adhere a 6 inch wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
 - 1. Tape seal joints.
 - 2. Extend sheet full height of joint.
- B. Apply adhesive to back of boards:
 - 1. Three continuous beads per board length.
 - 2. Full bed 1/8 inch thick.
- C. Install boards horizontally on foundation perimeter.
 - 1. Place boards to maximize adhesive contact.
 - 2. Install in running bond pattern.
- D. Extend boards over expansion joints, unbonded to foundation on one side of joint.
- E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- F. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.
 - 1. Apply adhesive in five continuous beads per board length.
 - 2. Install boards horizontally from base of foundation to top of insulation.

3.03 BOARD INSTALLATION UNDER CONCRETE SLABS

- A. Place insulation under slabs on grade after base for slab has been compacted.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.04 BATT INSTALLATION

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- F. Staple or nail facing flanges in place at maximum 6 inches on center.
- G. Tape seal bull ends, lapped flanges, and tears or cuts in membrane.
- H. At wood stud framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over member face, insulation board joints.
- I. Tape seal tears or cuts in vapor retarder.
- J. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.
- K. Coordinate work of this section with requirements for vapor retarder specified in Section 07260.

3.05 PROTECTION OF FINISHED WORK

- A. Do not permit installed insulation to be damaged prior to its concealment.

3.06 SCHEDULES

- A. Perimeter Insulation: Extruded polystyrene, bead adhesive application, 1" thick.
- B. Wood Framed Wall Insulation: R-21 batt insulation
- C. Truss space: R-49 minimum batts

END OF SECTION

SECTION 07411- METAL ROOF PANELS

PART I –GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary
- B. Conditions and Division I Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Factory-formed and field-assembled standing-seam metal roof panels and appropriate underlayment material.
- B. Related Sections include the following:
 - 1. Division 7 Section "Metal Wall Panels" for factory-formed metal soffit panels.
 - 2. Division 7 Section "Sheet Metal Flashing and Trim" for fascia, copings, flashings and other sheet metal work not part of metal roof panel assemblies.
 - 3. Division 7 Section "Manufactured Roof Specialties" for fascia and copings not part of metal roof panel assemblies.
 - 4. Division 7 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

1.3 DEFINITIONS

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weather tight roofing system.
- B. Solar Flux: Direct and diffuse radiation from the sun received at ground level over the solar spectrum, expressed in watts per square meter. .
- C. Solar Reflectance: Fraction of solar flux reflected by a surface, expressed as a percent or within the range of 0.00 and 1.00.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide metal roof panel assemblies that comply with performance requirements specified as determined by testing manufacturers' standard assemblies similar to those indicated for this Project, by a qualified testing and inspecting agency.
- B. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift resistance class 90.
- C. Air and Water Infiltration: Provide test results of ASTM test E1646 Standard test method for water penetration of exterior metal roof and siding systems by uniform static air pressure difference and ASTM test E1680 Standard test method or air leakage through exterior metal roof and siding systems.
- D. Provide test results showing specified panel assembly passing ASTM E2140-01 Standard Test Method for Water Penetration of Metal Roof Panel System by Static Water Pressure Head. (Hydrostatic Roof System Test)
- E. FMG Listing: Provide metal roof panels and component materials that are listed in FMG's "Approval Guide" for Class I. Identify materials with FMG label.
 - 1. Fire: Class A
 - 2. Windstorm Classification: Class 1-105.
 - 3. Hail Resistance: SH Class 4
- F. Structural Performance: Provide metal roof panel assemblies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, based on testing according to procedures listed in ASTM E 1592:
 - 1. Wind Loads: Determine loads based on the following minimum design wind pressures:
 - a. Uniform pressure as indicated on Drawings.
 - b. Wind Speed: 90 mph.
 - 2. Snow Loads: 35 lbs/sq. ft.
Live Loads: 20 lbs/sq. ft.
 - 3. Deflection Limits: Engineer metal roof panel assemblies to withstand design loads with calculated vertical deflections no greater than 180^{th} of the span.
- G. Thermal Movements: Provide metal roof panel assemblies that allow for thermal movements

resulting from the following maximum change (+ or - 100 degrees F) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

- H. Metal panel assembly shall be listed with Underwriters' Laboratories as Class A roof systems with regards to their resistance to external flame sources.
- I. Metal panel shall be listed with Underwriters' Laboratories as Class 4 Hail resistant panels.

1.5 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal roof panel and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of metal roof panels; details of edge conditions, joints, panel profiles, corners, anchorages, trim, flashings, closures, accessories, and special details and should be specific to this project. All drawings to be stamped and sealed by an engineer employed by the metal roof manufacturer and shall be registered in the state of Ohio. Distinguish between factory- and field-assembled work.
 - 1. Accessories: Include details of the following items:
 - a. Flashing and trim.
 - b. Gutters.
 - c. Downspouts.
 - d. Roof curbs.
 - e. Pipe penetration flashings
 - f. Snow guards.
 - 2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Samples for Initial Selection: For each type of metal roof panel indicated with factory-applied color finishes.
 - 1. Include similar Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
 - 1. Metal roof Panels: 12 inches long by actual panel width. Include fasteners, clips, closures, and other metal roof panel accessories.
 - 2. Trim and Closures: 12 inches long. Include fasteners and other exposed accessories.
 - 3. Vapor Retarders: 6-inch- square Samples.
 - 4. Accessories: 12-inch-long Samples for each type of accessory.
- E. Material Certificates: For thermal insulation signed by manufacturers.
- F. Qualification Data: Installer, professional engineer.
- G. Field quality-control inspection reports.
- H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for the following:
 - 1. Metal roof Panels: Include reports for air infiltration, water penetration, thermal performance, fire-test-response characteristics, solar reflectance and structural performance.
 - 2. Insulation and Vapor Retarders: Include reports for thermal resistance, fire-test-response characteristics, water-vapor transmission, and water absorption.
- I. Maintenance Data: For metal roof panels to include in maintenance manuals.
- J. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer, having completed a documented, comprehensive manufacturer's installation training program.
 - 1. Installer's responsibilities include installation of metal roof panel assemblies and providing professional engineering services by metal roof panel manufacturer.
 - 2. Engineering Responsibility: Preparation of data for metal roof panels, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Source Limitations: Obtain metal roof panels through one source from a single manufacturer.

- C. Product Options: Drawings indicate size, profiles, and dimensional requirements of metal roof panels and are based on the specific system indicated. Refer to Division I Section "Product Requirements."
 - 1. Do not modify intended aesthetic effects, as judged solely by Engineer, except with Engineer approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- D. Fire-Resistance Ratings: Where indicated, provide metal roof panels identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.
 - 2. Metal roof panels shall be identified with appropriate markings of applicable testing and inspecting agency.
- E. Preliminary Roofing Conference: Before starting roof construction, conduct conference at Project site. Comply with requirements for preinstallation conferences in Division 1 Section "Project Management and Coordination." Review methods and procedures related to roof joist construction and metal roof panels including, but not limited to, the following:
 - 1. Meet with Owner, Engineer, Owner's insurer if applicable, testing and inspecting agency representative, metal roof panel Installer, metal roof panel manufacturer's representative, joist Installer, and installers whose work interfaces with or affects metal roof panels including installers of roof accessories and roof-mounted equipment.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal roof panel installation, including manufacturer's written instructions.
 - 4. Examine joist conditions for compliance with requirements, including flatness and attachment to structural members.
 - 5. Review structural loading limitations of joist during and after roofing.
 - 6. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
 - 7. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
 - 8. Review temporary protection requirements for metal roof panels during and after installation.
 - 9. Review roof observation and repair procedures after metal roof panel installation.
- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:
 - 1. Meet with Owner, Engineer, Owner's insurer if applicable, testing and inspecting agency representative, metal roof panel Installer, metal roof panel manufacturer's representative, deck Installer, and installers whose work interfaces with or affects metal roof panels including installers of roof accessories and roof-mounted equipment.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal roof panel installation, including manufacturer's written instructions.
 - 4. Examine deck substrate, purlins and rafter conditions for compliance with requirements, including flatness and attachment to structural members.
 - 5. Review structural loading limitations of deck and joist during and after roofing.
 - 6. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
 - 7. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
 - 8. Review temporary protection requirements for metal roof panel assembly during and after installation.
 - 9. Review roof observation and repair procedures after metal roof panel installation.
 - 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal roof panels, and other manufactured *items* so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.
- B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, *twisting*, and surface damage.
- C. Stack metal roof panels on platforms or pallets, covered with suitable weather tight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal roof panels to be performed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Verify locations of roof framing and roof opening dimensions by field measurements before metal roof panel fabrication and indicate measurements on Shop Approval Drawings.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating metal roof panels without field measurements, or allow for field-trimming of panels. Coordinate roof construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.9 COORDINATION

- A. Coordinate installation of roof curbs, equipment supports, and roof penetrations, which are specified in Division 7 Section "Roof Accessories." Provide roof system manufacturer's curbs.
- B. Roof installer must supply and install roof accessories that are approved, supplied, and warranted by the roofing manufacturer, and according to manufacturer's recommended details.
- C. Coordinate metal panel roof assemblies with rain drainage work, flashing, trim, and construction of decks, joist parapets, walls, and other adjoining work to provide a leak proof, secure, and noncorrosive installation.

1.10 WARRANTY

- A. Standard Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal roof panel assemblies that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures, including rupturing, cracking, or puncturing.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Period: One year from date of final Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No.8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of final Completion.
- C. Special Weather tightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weather tight, including leaks, within specified warranty period. This warranty will include the roof panels, trims, transitions, pipe penetration flashings, curbs and wall panels. This warranty in conjunction with the built-up roofing warranty are to be issued by a single manufacturer and are to include all tie-ins or transitions between dissimilar roof systems and shall be warranted against leaks into the building.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

2. Warranty Limit of Liability: Installed cost of metal roof system including labor and materials.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Products specified are from companies listed below, or approved equivalent. These products listed herein establish the size, pattern, color range and function selected by the Engineer for this Project. Manufacturers listed are acceptable. Alternative manufacturers must still comply with the requirements of the products listed during the submittal process in order to be approved as an equivalent. If the acceptable alternative manufacturers listed are not approved during the Submittal Process due to non-compliance with the written documents, then the Contractor shall submit product specified.
- B. Approved Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.
 1. TremLock VP by Tremco Incorporated, 3734 Green Road, Beachwood, Ohio
- C.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
 2. Basis-of-Design Product: The design for each metal roof panel specified is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product.

2.2 PANEL MATERIALS

- A. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
 1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.
 2. Surface: Smooth finish.
 3. Exposed Finishes: Apply the following coil coating, as specified or indicated on Drawings.
 - a. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. Fluoropolymer Two-Coat System: Manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing with a minimum total dry film thickness of 0.9 mil; not less than 70 percent polyvinylidene fluoride resin.
 4. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.
- B. Panel Sealants:
 1. Sealant Tape: Pressure-sensitive, 99 percent solids, gray butyl rubber compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, nonstaining tape 1 inch wide and 1/16 inch thick minimum containing nylon spacer beads.
 2. Joint Sealant ASTM C 920; elastomeric polyurethane sealant; of type, grade, class, and use classifications required to seal joints in metal roof panels and remain weather tight; and as recommended in writing by metal roof panel manufacturer.
 3. Butyl-Rubber-Based, Solvent-Release Sealant containing nylon spacer beads.

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, SBS Base Sheet: ASTM D1970-00, .080 in. thick minimum, consisting of specially blended SBS modified asphalt above the fiberglass mat, with an SIS modified self adhesive bitumen blend below the fiberglass reinforcement. The bottom is provided with release-paper backing; cold applied.
 1. Products:
 - a. None necessary for this project
- B. Sheathing Paper: Red-rosin type, minimum 3 lb/ 100 sq. ft. if necessary.

2.4 MISCELLANEOUS MATERIALS

- A. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of factory-applied coating.
 - 1. Fasteners for Roof Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless-steel cap or zinc-aluminum-alloy head and EPDM sealing washer.
 - 2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
 - 3. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

2.5 STANDING-SEAM METAL ROOF PANELS

- A. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Factory-formed with vertical ribs at panel edges and flat pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels, and mechanically seaming panels together. Metal roof panel and trims are to utilize hydrostatic details at all trims, transitions, and penetrations.
 - 1. Basis-of-Design Product: Tremco TremLock VP, Tremco Inc. Beachwood OH 44122.
 - 2. Material: G-90 Zinc-coated galvanized steel sheet, .0276 (24 gauge) thick.
 - a. Exterior Finish: "Kynar 500/Hylar 5000"
 - b. Color: Match Pac Clad 'Antique Copper.'
 - 3. Clips: Low Moveable to accommodate thermal movement. Fixed clips in areas where design permits.
 - a. Material: .0336 thick, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
 - 4. Joint Type: Single folded
 - 5. Panel Coverage: 16 inches.
 - 6. Panel Height 2.0 inches.
 - 7. Uplift Rating: UL 90.
- B. On-site roll formed panels will not be allowed nor will panels manufactured from portable roll forming equipment.

2.6 ACCESSORIES

- A. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including trim, copings, fascia, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels, unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.
 - 2. Clips: Minimum .0336 thick, steel panel clips designed to withstand negative-load requirements.
 - 3. Backing Plates: Provide metal backing plates at panel end splices, pre-fabricated from manufacturer with stainless steel studs.
- B. Flashing and Trim: Formed from 24 gauge thick, zinc-coated (galvanized) steel sheet, prepainted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels. All details will be installed utilizing hydrostatic joinery.
- C. Exterior Metal Gutters: Formed from 24 gauge, thick, zinc-coated (galvanized) steel sheet repainted with coil coating. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in maximum length possible to minimize joints. Furnish gutter supports per manufacturers' standard, installed without through-fastening of panel. Provide wire ball strainers at outlets. Finish gutters to match metal roof panels or roof fascia and rake trim.
- D. Downspouts: Formed from 26 gauge, thick, zinc-coated (galvanized) steel sheet prepainted with coil coating; in 10-foot long sections, complete with formed elbows and offsets. Finish downspouts to match metal roof panels as per noted on drawings.
- E. Roof Curbs: Fabricated from aluminum sheet per manufacturer's standard, with integral

internal flange for attachment minimizing through fastening. Roof curbs to be supplied by the metal roof manufacturer and to be included with weather tightness warranty.

1. Insulate roof curb with 1-inch- thick, rigid insulation.
- F. Snow Guards: Prefabricated, noncorrosive units designed to be installed without penetrating metal roof panels, and complete with predrilled holes, clamps, or hooks for anchoring. Snow guard system to be engineered by Snow Guard Manufacturer.
 1. Seam-Mounted, Bar-Type Snow Guards: Aluminum rods or bars held in place by stainless-steel clamps attached to vertical ribs of standing-seam metal roof panels.
 - a. Aluminum Finish: Kynar 500/ hylar 5000 color to match metal roof panels
 - b. Stainless-Steel Finish: Mill.
 - c. Products:
 - 1) LMCurbs; S-5! SnoFence.
 - 2) Snow Management Systems, a division of Contek, Inc.; Vermont Snowguard.
- G. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base and stainless steel pipe clamp to secure collar to pipe. Pipe penetration flashings to be supplied by the metal roof manufacturer and to be included with weather tightness warranty.

2.7 FABRICATION

- A. General: Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Where indicated, fabricate metal roof panel joints with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will minimize noise from movements within panel assembly.
- D. Sheet Metal Accessories: Fabricate flashing and trim to comply with manufacturers' standard.
 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 2. Conceal fasteners and expansion provisions where possible.
 3. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended by metal roof panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal roof panel manufacturer for application but not less than thickness of metal being secured.

2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 –EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of work.
 1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.

2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
 3. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
- B. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.
- B. Install flashings and other sheet metal to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."
- C. Install fasciae and copings to comply with metal roof manufacturers standard details.
- D. Miscellaneous Framing: Install subpurlins, eave angles, furring, and other miscellaneous roof panel support members and anchorage according to metal roof panel manufacturer's written recommendations.

3.3 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free, on roof sheathing under metal roof panels. Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply as per manufacturers recommended instructions, in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Extend underlayment into gutter trough. Roll laps with roller. Cover underlayment within 14 days or follow underlayment manufacturer's guidelines.
 1. Roof perimeter for a distance up from eaves of at the length and wide required by the manufacturer, beyond interior wall line. Install 6' from eave.
 2. Valleys, from lowest point to highest point, for a distance on each side of as per manufacturers specifications. Overlap ends of sheets not less than 6 inches.
 3. Rake edges for a minimum distance required by the manufacturer.
 4. Hips and ridges for a distance on each side as per manufacturer specifications
 5. Roof to wall intersections for a distance from wall as per manufacturer specifications
 6. Around dormers, chimneys, skylights, and other penetrating elements for a distance from element of minimum requirement required by the manufacturer.
- B. Sheeting Paper: Install red-rosin sheet over self-adhering sheet or 30 lb. felt before installing metal roof panels.

3.4 METAL ROOF PANEL INSTALLATION, GENERAL

- A. General: Provide metal roof panels of full length from eave to ridge, unless otherwise indicated or restricted by shipping limitations. Anchor metal roof panels and other components of the Work securely in place, with provisions for thermal and structural movement. Utilize hydrostatic joinery throughout. No joinery to be dependent on exterior sealants to ensure weather tightness.
 1. Field cutting of metal roof panels by torch or abrasive cut-saw is not permitted.
 2. Install panels perpendicular to purlins.
 3. Rigidly fasten eave end of metal roof panels and allow ridge end free movement due to thermal expansion and contraction.
 4. Provide pre-fabricated and pre-drilled metal closures at peaks rake edges rake walls and each side of ridge and hip caps.
 5. Flash and seal metal roof panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.
 6. Locate and space fastenings in uniform vertical and horizontal alignment per shop drawings.
 7. Install ridge and hip caps as metal roof panel work proceeds.
 8. Locate panel splices over, but not attached to, structural supports. Stagger panel splices

- and end laps to avoid a four-panel lap splice condition.
- 9. Lap metal flashing over metal roof panels to allow moisture to run over and off the material.
- B. Fasteners:
 - 1. Steel Roof Panels: Use manufacturer's standard corrosion resistant steel fasteners for surfaces exposed to the exterior and galvanized steel fasteners for surfaces exposed to the interior.
- C. Joint Sealers: Install sealants where indicated and where required for weatherproof performance of metal roof panel assemblies. Provide sealants recommended by metal roof panel manufacturer.
 - 1. Seal metal roof panel end laps with manufacturer's recommended sealant, full width of panel. Seal side joints where recommended by metal roof panel manufacturer.
 - 2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

3.5 FIELD-ASSEMBLED METAL ROOF PANEL INSTALLATION

- A. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.
 - 3. Install clips to supports with self-tapping fasteners.
 - 4. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 - 5. Snap Joint Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 - 6. Seamed Joint: Form standing seams with manufacturer-approved motorized seamer tool
 - 7. so clip, metal roof panel, and factory-applied sealant are completely engaged.3.6

3.5 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weather tight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions. Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
 - 1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
 - 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.
- C. Exterior Metal Gutters: Join sections with riveted, lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 4 feet o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- D. Interior Box Gutter: Fully adhere thermoplastic single ply membrane in adhesive per manufacturer recommendations.
- E. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
 - 1. Provide elbows at base of downspouts to direct water away from building.
 - 2. Tie downspouts to underground drainage system indicated.
- F. Roof Curbs: Install curbs supplied by metal roof manufacturer, at locations indicated on Drawings. Curbs to be of internal flange design.
- G. Bar-Type Snow Guards: Attach bar supports to vertical ribs of standing-seam metal roof panels with clamps or set screws. Do not use fasteners that will penetrate metal roof panels.
 - 1. Provide snow guards, at locations indicated on Drawings.
- H. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to

metal roof panels with aluminum blind-type clamping fastener.

3.6 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal roof panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect during the installation of the metal roofing system and re-inspect completed metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal roof panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07411

SECTION 07620 - SHEET METAL FLASHING AND TRIM

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings and counter flashings.
- B. Reglets and accessories.

1.02 RELATED SECTIONS

- A. Section 07611 - Custom Sheet Metal Roofing.
- B. Section 07900 - Joint Sealers.

1.03 REFERENCES

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2005.
- B. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2005a.
- C. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2004.
- D. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2004.
- E. E. ASTM B 370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2003.
- F. F. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2005.
- G. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2000.
- H. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials which may cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Pre-Finished Aluminum: ASTM B 209 (ASTM B 209M); 0.032 inch thick; plain finish shop pre coated with fluoropolymer coating to match dark bronze finish .
 - 1. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as scheduled.
- B. Stainless steel flashing: Stainless steel sheets Type 3021304, 2d finish, dead soft or standard annealed, in the following gages:
 - 1. Flashing and flashing receivers: 26 gage
 - 2. In wall flashing: 28 gage

2.02 ACCESSORIES

- A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.
- B. Underlayment: ASTM D 226, organic roofing felt, Type I ("No. 15").
- C. Primer: Zinc chromate type.
- D. Protective Backing Paint: Zinc molybdate alkyd.
- E. Plastic Cement: ASTM D 4586, Type I.

2.03 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch; miter and seam comers.
- D. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate comers from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- F. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.
- G. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

- A. Insert flashings into reglets to form tight fit. Secure in place with lead wedges. Pack remaining spaces with lead wool. Seal flashings into reglets with sealant.
- B. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- E. Seal metal joints watertight.

3.04 FIELD QUALITY CONTROL

- A. See Section 01400 - Quality Requirements, for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.
- C. Coordinate with metal roof installer. Any flashing work on roof to be done by roofing contractor installing metal and built up roof

END OF SECTION

SECTION 07900 - JOINT SEALERS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Sealants and joint backing.
- B. Precompressed foam sealers.
- C. Hollow gaskets.

1.02 RELATED SECTIONS

- A. Section 07260 - Vapor Retarders: Sealants required in conjunction with air barriers and vapor retarders:
- B. Section 07840 - Fire stopping: Fire stopping sealants.
- C. Section 08800 - Glazing: Glazing sealants and accessories.
- D. Section 09260 - Gypsum Board Assemblies: Acoustic sealant.

1.03 REFERENCES

- A. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 2002.
- B. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2005a.
- C. ASTM D 1667 - Standard Specification for Flexible Cellular Materials-Poly(Vinyl Chloride) Foam (Closed-Cell); 2005.
- D. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.06 MOCK-UP

- A. Provide mock-up of sealant joints in conjunction with window under provisions of Section 01400.
- B. Construct mock-up with specified sealant types and with other components noted.
- C. Locate where directed.
- D. Mock-up may remain as part of the Work.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.08 COORDINATION

- A. Coordinate the work with all sections referencing this section.

1.09 WARRANTY

- A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Silicone Sealants:
 - 1. Bostik, Inc: www.bostik-us.com.
 - 2. GE Plastics: www.geplastics.com.
 - 3. Pecora Corporation: www.pecora.com.
 - 4. BASF Construction Chemicals, Inc: www.chemrex.com.

5. Substitutions: See Section 01600 - Product Requirements.
- B. Polyurethane Sealants:
 1. Bostik, Inc: www.bostik-us.com.
 2. Pecora Corporation: www.pecora.com.
 3. BASF Construction Chemicals, Inc: www.chemrex.com.
 4. Substitutions: See Section 01600 - Product Requirements.
- C. Butyl Sealants:
 1. Bostik, Inc: www.bostik-us.com.
 2. Pecora Corporation: www.pecora.com.
 3. Substitutions: See Section 01600 - Product Requirements.
- D. Acrylic Emulsion Latex Sealants:
 1. Bostik, Inc: www.bostik-us.com.
 2. Pecora Corporation: www.pecora.com.
 3. BASF Construction Chemicals, Inc: www.chemrex.com.
 4. Substitutions: See Section 01600 - Product Requirements.

2.02 SEALANTS

- A. Sealants and Primers - General: Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of the South Coast Air Quality Management District Rule No.1168.
- B. General Locations of Sealants:
 1. Location 'A' - Joints in floors, paving, slabs and wherelse horizontal surfaces are subject to foot or vehicular traffic.
 2. Location 'B' - Exterior vertical joints, interior vertical expansion and control joints and other interior vertical joints subject to movement, and horizontal joints not requiring Class A sealant.
 3. Location 'C' - Silicone sealant for joints at plumbing fixtures and pipes, and countertops and backsplashes at walls.
 4. Location 'D' - Acoustical sealant in openings and at perimeter of partitions with acoustical insulation
 5. Location 'E' - Non-moving interior vertical joints not requiring any of the above.
- C. Materials:
 1. Location A Sealant: Self leveling type, multi-component. ASTM C920, Type M, Grade P, Class 25
 2. Location B Sealant:
 - a. Urethane: Non sag type, multi-component type, ASTM C920, Type M, Grade NS, Class 25
 - b. Silicone: Non sag type, single component type, ASTM C920, Type S, Grade NS, Class 25
 3. Location C Sealant: Silicone sanitary sealant, ASTM C920, Type S, Grade NS, Class 25
 4. Location D Sealant: Synthetic rubber - Tremco Acoustical Sealant, Pecora BA-98 Acoustical Sealant, United States Gypsum Company Acoustical Sealant, or W. W. Henry #413 Acoustical Sealant where exposed and painted or #313 Sound Control Sealant where concealed and not painted.
 5. Backing:
 - a. For Location A joints: Round rod of solid neoprene or butyl rubber with Shore A hardness of 70 approximately.
 - b. For other joints: Closed cell "Sof Rod" by Nomaco, Inc., Zebulon, N.C., or equal. Provide open cell type only if required by sealant manufacturer and approved by Engineer

2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker. Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

- A. Remove loose materials and foreign matter which might impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C 1193.
- D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C 1193.
- C. Perform acoustical sealant application work in accordance with ASTM C 919.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- E. Install bond breaker where joint backing is not used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- H. Tool joints concave.

3.04 CLEANING

- A. Clean adjacent soiled surfaces.

3.05 PROTECTION OF FINISHED WORK

- A. Protect sealants until cured.

END OF SECTION

SECTION 08110 - HOLLOW METAL DOORS AND FRAMES

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 hollow metal doors and frames.

- B. Related Sections:

- 1. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
 - 2. Division 08 Section "Door Hardware".
 - 3. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.
- B. 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 each different wall opening condition.
 - 6. Details of anchorages, joints, field splices, and connections.
 - 7. Details of accessories.
 - 8. Details of moldings, removable stops, and glazing.
 - 9. Details of conduit and preparations for power, signal, and control systems.

C. Other Action Submittals:

1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
- B. 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 NFPA 252 or UL 10C.
1. Temperature-Rise Limit: At vertical exit enclosures provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.
- C. 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. Label each individual glazed lite.
- D. Smoke-Control Door Assemblies: Comply with NFPA 105.

1.6 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.
1. Provide additional protection to prevent damage to finish of factory-finished units.
- 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.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.8 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ceco Door Products; an Assa Abloy Group company.
 - 2. Curries Company; an Assa Abloy Group company.
 - 3. Steelcraft; an Ingersoll-Rand company.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60metallic coating.
- D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Zcoating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.
- G. Grout: ASTM C 476, except with a maximum slump of 4 inches as measured according to ASTM C 143/C 143M.
- H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-development indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

- I. Glazing: Comply with requirements in Division 08 Section "Glazing."
- J. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mildry film thickness per coat. Provide inert-type non-corrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.3 STANDARD HOLLOW METAL DOORS

- A. General: Provide 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.
 - 1. Design: Flush panel.
 - 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffened core.
 - a. Fire Door Core: As required to provide fire-protection ratings indicated.
 - b. Thermal-Rated (Insulated) Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 6.0 deg F x h x sq. ft. /Btu when tested according to ASTM C 1363.
 - c. Exterior doors specified w/exit devices to be vertically steel stiffened.
 - 1) Locations: Exterior doors.
 - 3. Vertical Edges for Single-Acting Doors: Beveled edge.
 - a. Beveled Edge: 1/8 inch in 2 inches.
 - 4. Top and Bottom Edges: Closed with flush or inverted 0.042-inch thick, end closures or channels of same material as face sheets.
 - 5. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. Exterior Doors: Face sheets fabricated from metallic-coated, galvanized steel sheet. 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. Level 2 and Physical Performance Level B (Heavy Duty).
- C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet. 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. Level 2 and Physical Performance Level B (Heavy Duty).
- D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- E. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.4 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Exterior Frames: Fabricated from metallic-coated, galvanized steel sheet.
 - 1. Fabricate frames with mitered or coped corners.
 - 2. Fabricate frames as full profile welded unless otherwise indicated.
 - 3. Frames for Level 2 Steel Doors: 0.053-inch thick steel sheet.
- C. Interior Frames: Fabricated from cold-rolled steel sheet.
 - 1. Fabricate frames with mitered or coped corners.
 - 2. Fabricate frames as knocked down unless otherwise indicated.
 - 3. Fabricate knocked-down, drywall slip-on frames for in-place gypsum board partitions.
 - 4. Frames for Level 2 Steel Doors: 0.053-inch thick steel sheet.
 - 5. Frames for Wood Doors: 0.053-inch thick steel sheet.
 - 6. Frames for Borrowed Lights: 0.053-inch thick steel sheet.
- D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, 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, welded to back of frames; not less than 0.042 inch thick.
 - 3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
 - 4. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
- B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
 - 2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.6 STOPS AND MOLDINGS

- A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, fabricated from same material as door face sheet in which they are installed.

- B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated.
- C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, fabricated from same material as frames in which they are installed.

2.7 ACCESSORIES

- A. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch wide steel.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.8 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. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.
- C. Hollow Metal Doors:
 - 1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 - 2. Glazed Lites: Factory cut openings in doors.
 - 3. Astragals: Provide overlapping astragal 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.
- D. Hollow Metal Frames: 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.
 - 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - 2. Sidelight 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.
 - 3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 - 5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 - 6. 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. Compression Type: Not less than two anchors in each jamb.
- d. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
- a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- F. Hardware Preparation: Factory prepare hollow metal work to receive templated 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-templated, 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.
- G. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite are capable of being removed independently.

3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow metal work.
5. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.9 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pre-treating.
 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; compatible with substrate and field-applied coatings despite prolonged exposure.

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. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. 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 squareness, alignment, twist, and plumbness to the following tolerances:
 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

- C. Drill and tap doors and frames to receive non-templated, 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.
 - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-protection-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable glazing stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
 - 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 - 5. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
 - 6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 - 7. In-Place Gypsum Board Partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 - 8. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for

securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.

9. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- 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.
 3. Smoke-Control Doors: Install doors according to NFPA 105.
- D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.
 1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

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 Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08110

SECTION 08211 - FLUSH WOOD DOORS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors; flush and flush glazed configuration; fire rated and non-rated.

1.02 RELATED SECTIONS

- A. Section 06200 - Finish Carpentry.
- B. Section 08115 - Steel Door Frames.
- C. Section 08710 - Door Hardware.
- D. Section 08800 - Glazing.

1.03 REFERENCES

- A. ASTM E 1408 - Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems; 1991 (Reapproved 2000).
- B. AWI/AWMAC (OSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2006, 8th Ed., Version 2.0.
- C. ICC (IBC) - International Building Code; 2006.
- D. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition .
- E. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.
- F. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.
- G. UBC Std 7-2, Part II - Test Standard for Smoke- and Draft-control Assemblies; International Conference of Building Officials; 1997.
- H. H. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition .
- I. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; 2001.
- J. J. WDMA I.S.1-A - Architectural Wood Flush Doors; Window and Door Manufacturers Association; 2004.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Specimen warranty.
- D. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria, identify cutouts for glazing.
- E. Samples: Submit two samples of door veneer, 8" x 8" inch in size illustrating wood grain, stain color, and sheen.
- F. Manufacturer's Installation Instructions: Indicate special installation instructions.
- G. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.
- B. Perform work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Section 1300, Custom Grade.
- C. Finish doors in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Section 1500, grades identified in schedule.
- D. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 REGULATORY REQUIREMENTS

- A. Fire Door Construction: Conform to NFPA 252.
 - 1. Listed and classified by UL as suitable for the purpose specified and indicated.
- B. Installed Fire Rated Door Assembly: Conform to NFPA 80 for fire rated class as indicated.

- C. Smoke and Draft Control Doors: In addition to required fire rating, comply with air leakage requirements of USC Std 7-2, Part II; with "s" label; if necessary, provide additional gasketing or edge sealing.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.08 PROJECT CONDITIONS

- A. Coordinate the work with door opening construction, door frame and door hardware installation.

1.09 WARRANTY

- A. See Section 01780 - Closeout Submittals for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for the life of the installation.
- C. Provide warranty for the following term:
 - 1. Interior Doors: Life of installation.
- D. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wood Veneer Faced Doors:
 - 1. Assa Abloy Graham: www.grahamdoors.com.
 - 2. Eggers Industries: www.eggersindustries.com.
 - 3. Haley Brothers: www.haleybros.com.
 - 4. Southwood Door Company.
 - 5. Marshfield Door Systems: www.marshfielddoors.com.
 - 6. Substitutions: See Section 01600 - Product Requirements.
- B. High Pressure Decorative Laminate Faced Doors:
 - 1. Ampco Products, Inc: www.ampco.com.
 - 2. Poncraft Door Co: www.poncraft.com.
 - 3. VT Industries, Inc: www.vtindustries.com.
 - 4. Substitutions: See Section 01600 - Product Requirements.

2.02 DOORS

- A. All Doors: See drawings for locations and additional requirements.
 - 1. Quality Level: Custom Grade, Heavy Duty performance, in accordance with WDMA I.S.1-A.
 - 2. Quality Standard: WDMA 1.5. 1-A, Premium Grade. Finish, red oak; AWI 1300-S-1 plain sliced, book matched, center balance matched; select grain match. Pairs of doors shall be pair matched.
 - 3. Edging: Hardwood species compatible with face veneer.
 - 4. Core: Mat formed particle board AWI Section 1300-G-6 per AWI 1300 -5-3
 - 5. Stiles and rails; Hardwood securely bonded to core per core reference
 - 6. Adhesive: Type 1
 - 7. Wood Veneer Faced Doors: 7-ply unless otherwise indicated.
 - 8. High Pressure Decorative Laminate Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 - 1. Provide solid core doors at all locations.
 - 2. Prefinished to match the wood finish Koroguard wall protection.
 - 3. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with International Building Code ("positive pressure"); UL or WH (ITS) labeled without any visible seals when door is open.
 - 4. Smoke and Draft Control Doors: In addition to required fire rating, provide door assemblies tested in accordance with UL 1784 with maximum air leakage of 3.0 cfm per sq ft of door opening at 0.10 inch w.g. pressure at both ambient and elevated temperatures; with "S"

- label; if necessary, provide additional gasketing or edge sealing.
- 5. Core: Non-combustible mineral core.
- 6. High pressure decorative laminate finish where indicated on drawings.

2.03 DOOR AND PANEL CORES

- A. Non-Rated Solid Core and 20 Minute Rated corridor Doors: Type particleboard core (PC), plies and faces as indicated above.
- B. Fire Rated Doors: Mineral core, Type FD, plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

2.04 DOOR FACINGS

- A. Wood Veneer Facing for Transparent Finish: Species as specified above, veneer grade as specified by quality standard, plain sliced, book veneer match, running assembly match; unless otherwise indicated.
 - 1. Vertical Edges: Any option allowed by quality standard for grade.
 - 2. Pairs: Pair match each pair; set match pairs within 10 feet of each other when doors are closed.
- B. Interior Doors - Veneer: Maple species, veneer grade as specified by door quality standard, plain sliced, with book matched grain, for transparent finish.
- C. High Pressure Decorative Laminate Facing for Fire Doors: NEMA LD 3, SGF; color(s) as indicated; textured, low gloss finish.

2.05 ACCESSORIES

- A. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.
- B. Astragals for Non-Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge.
- C. Astragals for Fire Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge, specifically for double doors.

2.06 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with Stiles and Rails:
- C. Fabricate fire rated doors in accordance with UL requirements. Attach fire rating label to door.
- D. Astragals for Non-Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge.
- E. Astragals for Fire Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge, specifically for double doors.
- F. Sound Rating For Single Door Leaf and Frame Assembly: Minimum STC of 35, calculated in accordance with ASTM E 413, tested in accordance with ASTM E 1408.
- G. Provide solid blocks at lock edge for hardware reinforcement.
 - 1. Provide solid blocking for other through bolted hardware.
- H. Fit door edge trim to edge of stiles after applying veneer facing.
- I. Vertical Exposed Edge of Stiles - Veneer Faces: Of same species as veneer facing.
- J. J. Fit door edge trim to edge of stiles after applying veneer facing.
- K. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- L. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
 - 1. Exception: Doors to be field finished.
- M. Provide edge clearances in accordance with AWI Quality Standards Illustrated Section 1700.
- N. Provide edge clearances in accordance with AWI Quality Standards Illustrated Section 1700.

2.07 FACTORY FINISHING - WOOD VENEER DOORS

- A. Factory finish doors in accordance with specified quality standard:
 - 1. Transparent Finish: TR-4, Alkyd-Urea conversion varnish, Premium quality, Medium Rubbed sheen.
 - 2. Stain: To be selected by Engineer
 - 3. Effect: Closed grain - fill open grain wood.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
 - 1. Install fire-rated doors in accordance with NFPA 80 requirements.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Trim door height by Cutting bottom edges to a maximum of 3/4 inch (19 mm).
 - 1. Trim fire door height at bottom edge only, in accordance with fire rating requirements.
- D. Use machine tools to cut or drill for hardware.
- E. Coordinate installation of doors with installation of frames and hardware.
- F. Coordinate installation of glazing.

3.03 INSTALLATION TOLERANCES

- A. Conform to specified quality standard for fit and clearance tolerances.
- B. Conform to specified quality standard for maximum diagonal distortion.
- C. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taut string, top to bottom, over an imaginary 36 by 84 inches surface area.
- D. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 by 84 inches surface area.

3.04 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

3.05 SCHEDULE - See Drawings

END OF SECTION

SECTION 08410 - METAL-FRAMED STOREFRONTS AND WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weather-stripping.
- D. Door hardware.
- E. Perimeter sealant.

1.02 RELATED SECTIONS

- A. Section 07260 - Vapor Retarders: Perimeter air and vapor seal between glazing system and adjacent construction.
- B. Section 07840 - Fire stopping: Fire stop at system junction with structure.
- C. Section 07900 - Joint Sealers: Perimeter sealant and back-up materials.
- D. Section 08710 - Door Hardware: Hardware items other than specified in this section.
- E. Section 08800 - Glazing: Glass and glazing accessories.
- F. Section 09900 - Paints and Coatings: Field painting of interior surface of infill panels.

1.03 REFERENCES

- A. AA DAF-45 - Designation System for Aluminum Finishes; The Aluminum Association, Inc.; 2003.
- B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2004.
- C. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; American Architectural Manufacturers Association; 2003 (part of AAMA 501).
- D. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.
- E. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers; 2005.
- G. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2005a.
- H. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2005a.
- I. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004.
- J. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2002.
- F. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000.
- K. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).
- L. SSPC-Paint 25 - Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II; Society for Protective Coatings; 1997 (Ed. 2004).

1.04 PERFORMANCE REQUIREMENTS

- A. Design and size components to withstand the following load requirements without damage or permanent set, when tested in accordance with ASTM E 330, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
 - 1. Design Wind Loads: Comply with requirements of ASCE 7.
 - 2. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
- B. Movement: Accommodate movement between storefront and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
- C. Air Infiltration: Limit air infiltration through assembly to 0.06 cu ft/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E 283.
- D. Water Leakage: None, when measured in accordance with ASTM E 331 with a test pressure

difference of 2.86 lbf/sq ft.

- E. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
- F. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.

1.05 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, internal drainage details.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
- D. Design Data: Provide framing member structural and physical characteristics, engineering calculations, dimensional limitations.
- E. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- F. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- G. Report of field testing for water leakage.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in project's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at Ohio.
- B. Manufacturer and Installer: Company specializing in manufacturing aluminum glazing systems with minimum three years of documented experience.

1.07 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section.

1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond to aluminum when exposed to sunlight or weather.

1.09 PROJECT CONDITIONS

- A. Coordinate the work with installation of fire stopping components or materials.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.11 WARRANTY

- A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Kawneer Company, Inc: www.kawneer.com.

2. United States Aluminum Corp: www.usalum.com.
3. Vistawall Architectural Products: www.vistawall.com.
4. Substitutions: See Section 01600 - Product Requirements.

2.02 COMPONENTS

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 1. Unitized, shop assembly.
 2. Finish: Class I natural anodized.
- B. Aluminum Framing Members: Tubular aluminum sections, drainage holes and internal weep drainage system.
 1. Framing members for interior applications need not be thermally broken.
 2. Glazing stops: Flush. Allow for interior set on bridge
 3. Cross-Section: As indicated on drawings.
- C. Doors: Glazed aluminum.
 1. Thickness: 1-3/4 inches.
 2. Top Rail: 4 inches wide.
 3. Vertical Stiles: 4-1/2 inches wide.
 4. Bottom Rail: 6 inches wide.
 5. Finish: Same as storefront.

2.03 MATERIALS

- A. Extruded Aluminum: ASTM B 221 (ASTM B 221M).
- B. Fasteners: Stainless steel.
- C. Exposed Flashings: 0.032 inch thick aluminum sheet; finish to match framing members.
- D. Concealed Flashings: 0.018 inch thick galvanized steel.
- E. Perimeter Sealant: As specified in Section 07900.
- F. Glass: As specified in Section 08800.
- G. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
- H. Glazing Accessories: As specified in Section 08800.
- I. Shop and Touch-Up Primer for Steel Components: SSPC-Paint 25, zinc oxide, alkyd, linseed oil primer.
- J. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.04 FINISHES

- A. Comply with AA DAF-45 for aluminum finishes required.
- B. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.
- C. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.05 HARDWARE

- A. Door Hardware: Storefront manufacturer's standard type to suit application.
 1. Include for each door weather-stripping, sill sweep strip, threshold, butt hinges, pull handle,
 2. exit device, and closer.

2.06 FABRICATION

- A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and comers. Make joints flush, hairline, and weatherproof.
- C. Prepare components to receive anchor devices. Fabricate anchors.
- D. Coat concealed metal surfaces that will be in contact with cementations materials or dissimilar metals with bituminous paint.
- E. Arrange fasteners and attachments to conceal from view.
- F. Reinforce components internally for door hardware and door operators.
- G. Reinforce framing members for imposed loads.
- H. Finishing: Apply factory finish to all surfaces that will be exposed in completed assemblies.
 1. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Contractor to be aware that glazing is to occur in bridge above public roadway. Coordinate timing to accommodate times when specific lanes are shut down.
- B. Install wall system in accordance with manufacturer's instructions.
- C. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- D. Provide alignment attachments and shims to permanently fasten system to building structure.
- E. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- F. Provide thermal isolation where components penetrate or disrupt building insulation.
- G. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- H. Coordinate attachment and seal of perimeter air and vapor barrier materials.
- I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- J. Set thresholds in bed of mastic and secure.
- K. Install hardware using templates provided.
- L. Install glass and infill panels in accordance with Section 08800, using glazing method required to achieve performance criteria.
- M. Install perimeter sealant in accordance with Section 07900.

3.03 ERECTION TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 1/16 inches per 10 ft, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

- A. See Section 01400 - Quality Requirements, for independent testing and inspection requirements. Inspection will monitor quality of installation and glazing.
- B. Test installed storefront for water leakage in accordance with AAMA 501.2.

3.05 ADJUSTING

- A. Adjust operating hardware for smooth operation.

3.06 CLEANING AND PROTECTION

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- C. Remove excess sealant by method acceptable to sealant manufacturer.
- D. Touch-up minor damage to factory applied finish ; replace components that cannot be satisfactorily repaired.
- E. Protect finished work from damage.

END OF SECTION

SECTION 08710 - DOOR HARDWARE & INTEGRATED ACCESS CONTROL

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. This Section includes the following:
- B. Section includes commercial door hardware and integrated access control security system hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- C. Commercial hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Electromechanical door hardware power supplies, back-ups and surge protection.
- D. Integrated access control security system includes, but is not necessarily limited to, the following:
 - 1. Monitoring and signaling hardware.
 - 2. Remote card readers, access cards and credentials.
 - 3. Source and low voltage wiring and communication cabling.
 - 4. Access control system power supplies, back-ups and surge protection.
- E. Related Sections:
 - 1. Division 08 Section 081100 "Steel Doors and Frames."
 - 2. Division 08 Section 081400 "Flush Wood Doors."
 - 3. Division 08 Section 084100 "Aluminum-Framed Entrances and Storefronts."
 - 4. Division 26 Sections (inclusive) for connections to electrical power system and for low-voltage wiring work.
 - 5. Division 28 Section 283100 "Fire Detection and Alarm."
- F. References:

1. ANSI A117.1 (2017 - Accessible and Usable Buildings and Facilities.
 2. OBC 2024 - International Building Code.
 3. NFPA 70 (2023) - National Electrical Code.
 4. NFPA 80 (2025) - Fire Doors
 5. NFPA 101 (2024) - Life Safety Code.
 6. UL 294 - Access Control Systems.
 7. UL 1076 - Proprietary Burglar Alarm Units and Systems.
- G. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.
1. Permanent cores and keys to be installed by Owner.

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. Shop Drawings: Details of electrified locking hardware and access control firmware, indicating the following:
1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed wiring diagrams for power, signaling, monitoring, communication and control of the access control system electrified hardware and firmware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Complete (risers, point-to-point) access control system block wiring diagrams.
 - b. Elevation diagram of each unique access controlled opening showing interconnection of major system components.
 - c. System Operational Descriptions: Include description of component functions including, but not limited to, the following situations: normal secured/unsecured state of door; authorized access; authorized egress; unauthorized access; unauthorized egress; fire alarm and loss of power conditions, and interfaces with other building control systems.
- C. 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.
 - a. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Schedules 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.

4. Submittal Sequence: Submit the final Door and Integrated Access Control Hardware Schedule at earliest possible date, particularly where approval of the schedule must precede fabrication of other work that is critical in the Project construction timeline. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the schedule.

D. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.

E. Operating and Maintenance Manuals: Provide manufacturers hardware, software, operating and maintenance manuals for each item compiling the complete door hardware and access control system installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and telephone number of the supplier/integrator providing the installation and the nearest service representatives for each item of equipment included in the system. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

1. As-Built Drawings: During system installation, the Contractor to maintain a separate hard copy set of drawings, elevation diagrams, and wiring diagrams of the access control system to be used for record drawings. This set to be kept up to date by the Contractor with all changes and additions to the access control system accurately recorded.

F. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage firms experienced in manufacturing systems and equipment similar to those indicated for this Project and that have a record of successful in-service performance.

B. Installer Qualifications: Factory trained and certified Installers, acceptable by the product manufacturers, who have completed both standard and electrified builders hardware and integrated access control installations 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. Access Control System Integrator Qualifications: An experienced access control systems integrator who has completed projects similar in material, design, and extent to that indicated for this Project, whose work has resulted in a record of successful in-service performance, and is recognized as an authorized Supplier/Dealer in good standing by the manufacturer of primary materials. Qualifications include, but are not necessarily limited, to the following:
1. References: Provide a list of references for similar projects including contact name, phone number, name and type of project.
- D. Door Hardware Supplier Qualifications: An experienced door hardware supplier with warehousing facility in Project's vicinity and who has 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. Supplier recognized as an authorized distributor in good standing by the manufacturers of the primary materials.
1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- E. Source Limitations: Obtain each type and variety of door hardware and access control system firmware and software from a single source, qualified supplier and installer unless otherwise indicated.
1. Provide electrified door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 2. Source limitation applies to door hardware, electrified hardware and access control system hardware installed on the specified aluminum, steel and wood swinging doors.
- F. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:
1. Comply with NFPA 70 "National Electrical Code", including electrical components, devices, and accessories listed and labeled as defined in Article 100 by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 2. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
 - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

- c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
- 3. NFPA 101: Comply with the following for means of egress doors:
 - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. Thresholds: Not more than 1/2 inch high.
- 4. Fire-Rated Door Assemblies: Provide door hardware for 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 NFPA 252 (neutral pressure at 40" above sill) or UL-10C.
 - a. Test Pressure: Positive pressure labeling.
- G. Keying Conference: Conduct conference in compliance 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 system and software.
 - 4. Installation of permanent keys and cylinder cores.
 - 5. Address and requirements for delivery of keys.
- H. Pre-Installation Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Integrator, Installer, and Contractor to review proper installation methods and the procedures for receiving and handling the door and access control system hardware. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedules.
 - 1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
 - 2. Review sequence of operation for each unique access controlled opening.
 - 3. Review and finalize construction schedule and verify availability of materials.
 - 4. Review the required testing, inspecting, and certifying procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for items delivered to Project site.
 - 1. Access control firmware: Where approved and directed, inventory upon receipt and store electronic access control equipment in a secure, temperature and humidity controlled environment in original manufacturer's sealed containers.
- 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 permanent keys, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner established at the "Keying Conference".

1.6 COORDINATION

- A. Coordinate quantity and arrangement of assemblies with ceiling space configuration and with components occupying ceiling space, including structural members, pipes, air-distribution components, raceways, cable trays, recessed lighting fixtures, and other items.
- B. Access Control System Roughing-In: Coordinate the layout and installation of scheduled electrified door hardware and access control equipment with required connections to source power junction boxes, power supplies, detection and monitoring hardware and fire alarm system.
- C. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard, electrified and access control system hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- D. Door and Frame Preparation: Related Division 08 (Steel, Aluminum and Wood) doors and corresponding frames are to be prepared, reinforced and wired 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 will not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and are in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, executed by manufacturer, agreeing to repair or replace components of door hardware and access control system hardware that fails in materials or workmanship within the specified general and special warranty periods. 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. Special Warranty Periods (Door Hardware):
 - 1. Ten years for mortise locks and latches.
 - 2. Seven years for cylindrical (bored) locks and latches.
 - 3. Five years for exit devices.
 - 4. Ten years for manual door closers.
 - 5. 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 and access control system hardware.
- B. Maintenance Service: Beginning at Substantial Completion, provide continuous 6 months full maintenance by skilled employees of door hardware and integrated access control systems suppliers and installers. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

1.9 SCOPE OF WORK - INTEGRATED ACCESS CONTROL SYSTEM

- A. Furnish and install at the indicated locations the specified electrified door hardware and access control firmware and software for a completely operational integrated access control and security site management system. System includes, but is not necessarily limited, to the following:
 - 1. Electrified and integrated card key locks and exit device hardware, override cylinders, door position switches, remote card readers, access cards and credentials, system application software, special tools, operating manuals, and required cabling and accessories as detailed below and listed in the Hardware Sets at the end of Part 3.
 - 2. Electrical contractor (Division 26) to provide the following:
 - a. Source power wiring (120VAC) as required for the electrified locking and access control hardware, equipment, accessories and power supplies and the related conduit, stub-in, junction boxes and connectors required for the source power delivery and connections.
 - b. Provide required conduit, stub-in, junction and back boxes for both the electrified locking hardware and access control equipment at each of the access controlled or monitored openings per plan drawings and specs. Supply and install conduit between each of the aforementioned devices and between the electrical junction boxes, power supplies and access control equipment located on or above the door opening.
 - 1) At wall mounted card readers, provide conduit on the secured side of the door, 36" from the finish floor and 6" from the edge of the frame, to the related power supplies and access control equipment.
 - 2) At electrical hardware power transfers provide conduit on the secured side of the door from the power transfer, thru-wire hinge (pivot), or serviceable panel location on the frame jamb to the related power supplies and access control equipment.
 - c. Electrical Contractor to provide all 120VAC cabling connections and terminations from the electrical junction boxes to these electrical devices.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. General: Provide mechanical and electrified door hardware and access control system equipment and accessories for each designated opening to comply with requirements in this Section and with the Hardware Sets listed at the end of Part 3.
 - 1. Hardware Sets: Requirements for quantity, item, model, design, grade, finish, size, and other distinctive qualities of each type of door and access control hardware are indicated in the Hardware Sets at the end of Part 3.
 - 2. Named Manufacturer's Products: Product designation and manufacturer are listed for the purpose of establishing requirements.
- B. Substitution requests for complete door hardware and integrated access control systems in compliance with these 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 and their designated consultants.

2.2 ACCESS CONTROL SYSTEM (ACS)

- A. Remote Proximity Card Readers: Remote card readers are HID 125 kHz proximity compatible constructed of a low profile, weatherproof polycarbonate sealed enclosure suitable for either indoor or outdoor applications. Readers to have multi-color LED display and audible status indications and meet the following specifications:
 - 1. Power: Card reader powered from its associated controller, including its standby power source.
 - 2. Read Range: 5 - 7 inches.
 - 3. Mounting: Both mullion and wall options.
 - 4. Output: Wiegand protocol interface compatibility set up for 26-bit data cards.
 - 5. Source Manufacturer/Model:
 - a. WM 800
- B. Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.
 - 1. Source Manufacturer/Models:
 - a. Securitron - Model BPS Series.

2.3 DOOR HARDWARE

A. HINGES AND PIVOTS

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Butt Hinges:
 - 1) Bommer Industries (BO) – BB5000, BB5005 Series.
 - 2) Hager Companies (HA) - BB1279, BB1199 Series.
 - 3) McKinney Products (MC) - TA2714, TA3386 Series.
 - b. Continuous Geared Hinges:
 - 1) Bommer Industries (BO) - FMHDSLF Series.
 - 2) McKinney Products (MC) - MCK12HD Series.
 - 3) Pemko Manufacturing (PE) – CFMSLFHD Series.
2. Standards: BHMA Certified products complying with the following:
 - a. Butts and Hinges: BHMA A156.1.
 - b. Continuous Geared Hinges: BHMA A156.26.
 - c. Flush Floor Plates and Thresholds: Provide finish cover plates or thresholds as indicated in door hardware sets for floor hinges. Match door hardware finish, unless otherwise indicated.
3. Quantity: Provide the following, 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).
4. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

Maximum Door Size (inches)	Hinge Height (inches)	Metal Thickness (inches)	
		Standard Weight	Heavy Weight
Up to 36-in by 120-in by 1-3/4-in	4-1/2	0.134	0.180
> 36-in by 120-in by 1-3/4-in	5	0.146	0.190

5. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing hinges.
 - b. Interior Doors: Heavy weight, steel, ball bearing hinges unless Hardware Sets indicate standard weight.

6. Hinge and Pivot Options: Comply with the following where indicated in the Door 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 following applications:
 - 1) Out-swinging exterior doors.
 - 2) Out-swinging access controlled doors.
7. Continuous-Geared Hinges: Provide heavy-duty, full mortised models with minimum 0.120-inch thick, hinge leaves and minimum overall width of 4 inches; fabricated to full height of door and frame. Fabricate hinges non-handed and to template screw locations. Continuous hinges to be guaranteed for the life of the opening.
 - a. Serviceable Electrical Transfer Hinge: Provide electric transfer continuous hinges with a 12" removable hinge modification accessible without de-mounting door from the frame and Molex™ standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number of concealed wires to accommodate electric function of specified hardware. Wire nut connections are not acceptable. Five year limited warranty required.
8. Provide mortar guard enclosure on steel frames installed at masonry openings for each electrical power transfer specified.

B. DOOR OPERATING TRIM

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. LOCKS AND LATCHES

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Mechanical Bored Locks and Latches: Bored locks to incorporate Free Wheeling lever design with a lifetime warranty against lever sag and spring breakage.
 - a. Corbin Russwin Hardware (CR) - CL3300 Series.
 - b. Sargent Manufacturing (SA) - 10-Line Series.
 - c. Yale Security Group (YA) - 5400LN Series.
3. Standards: Comply with the following:
 - a. Bored Locks and Latches: BHMA Certified Grade 1, Series 4000.

4. Lock Trim: Match the following design style:
 - a. Levers: Corbin-Russwin (CR) - NZD Trim
5. Lock Functions: Function numbers and descriptions indicated in the Door Hardware Schedule comply with the following:
 - a. Bored Locks: BHMA A156.2.
6. Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
 - a. Bored Locks: Minimum 1/2-inch latchbolt throw.
7. Backset: 2-3/4 inches unless otherwise indicated.

D. ELECTRIFIED LOCKS

1. Manufacturers: Subject to same compliance standards and requirements as mechanical locksets, provide products by one of the following:
2. Electrified Options: As indicated in hardware sets, provide electrified lock options including: outside door trim control, latchbolt and lock/unlock status monitoring, and request-to-exit signaling. Unless otherwise indicated, provide electrified locksets standard as fail secure.
3. Self-Contained Electronic Locks and Readers: Internal, battery-powered, self-contained ANSI Grade 1 mortise or cylindrical lock consisting of electronically motor driven locking mechanism, integrated proximity card reader with keypad and specified accessories. Provide key override, low-battery detection and warning, LED status indicators, and ability to program at the lock for the functions indicated.
 - a. Self Contained Electronic Locks:
 - 1) Best (BE) - Basis "V" Series.
 - 2) Corbin Russwin Hardware (CR) - Access 800 AC2 Series.
 - 3) Sargent Manufacturing (SA) - Profile v.G1 Series.
4. Stand Alone Computer Managed Software: Provide software, and handheld infrared programmable transmitter, capable of working with Microsoft Windows operating systems (95 or higher), required to program time zone periods, holidays, automatic unlock with first entry, and listing 1,000 event transaction history - unlock, egress activation, entry into programming mode, date, time, user number, and door number.
 - a. Computer Managed Software:
 - 1) Best (BE) - Basis Software.

- 2) Corbin Russwin Hardware (CR) - Accessware AC2 Software.
- 3) Sargent Manufacturing (SA) - SoftLink Plus Software.

- b. Provide specified mounting brackets and housings for a complete and proper installation according to manufacturer's recommendations. Power supply to be by the same manufacturer as the electromagnetic lock with combined products having unlimited lifetime warranty.

E. CYLINDERS AND KEYING

1. Provide patented and restricted, security cylinders utilizing a unique factory code pattern that is both geographically and time zoned protected. Manufacturers of cylinders to allow for the ability of the patented and restricted security keys to operate both security and conventional cylinders that are used together under the same facility master or grandmaster key system. End User is required to have the ability for on-site cylinder pinning and original key cutting. A letter of authorization by the End User is required to accompany purchases of any products which involve patented and restricted cylinders, keys and accessories.
2. Cylinders:
 - a. Corbin Russwin Hardware (CR) - Pyramid PS Patented Cylinders.
 - b. Sargent Manufacturing (SA) - Signature Patented Cylinders.
 - c. Yale Security Group (YA) - 5000 Series Patented Cylinders.
3. Standards: BHMA certified products complying with the following:
 - a. Cylinders: BHMA A156.5, Grade 1.
4. Cylinders: Original manufacturer cylinders, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
 - a. Number of pins: Seven.
 - b. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
 - c. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 - d. Bored-Lock Type: Cylinders with tailpieces to suit locks.
5. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 - a. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
6. Construction Keying: Comply with the following:
 - a. Construction Master keying: Provide for either temporary construction (builders) keying or temporary construction keyed cores that are replaceable by permanent

cores (removable core cylinders). Provide construction master keys in quantity as required by project Contractor.

- 1) Replace construction cores with permanent cores. Furnish permanent cores to End User for installation.
7. Keying System: Unless otherwise indicated, provide for a keying system complying with the following requirements:
 - a. New Grand Master Key System: Cylinders are factory keyed operated by a change key, master key, and a grand master key. Conduct keying meeting with End User to define and document in writing keying system instructions and requirements.
8. Keys: Provide nickel-silver keys complying with the following:
 - a. Stamping: Permanently inscribe each key with a visual key control number and as directed by End User.
9. Quantity: Provide the following:
 - a. Cylinder Change Keys (Per Key Set): Three.
 - b. Master Keys (Per Level): Five.
 - c. Grand Master Keys: Two.
 - d. Construction Control Keys: Two.
 - e. Permanent Control Keys: Two.
 - f. Extra Keyed Permanent Cores: Five.
 - g. Extra Blank Keys: Fifty.
10. Key Registration List: Provide keying transcript list to Owner's representative for lock cylinders.
11. Key Control System: Provide one Lund Model 1200 Series lockable cabinet for key control and storage. Provide Owner with one networked version of "Key Wizard" key management software.

F. STRIKES

1. 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:
 - a. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - b. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - c. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
2. Standards: Comply with the following:
 - a. Strikes for Bored Locks and Latches: BHMA A156.2.

G. EXIT DEVICES

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Exit Devices:
 - 1) Corbin Russwin Hardware (CR) - ED4000/ED5000 Series.
 - 2) Sargent Manufacturing (SA) - 80 Series.
 - 3) Yale Security Group (YA) - 7200/7000 Series.
 - b. Exit Device Trim (Pull/Lever): Match the following design style:
 - 1) Corbin-Russwin (CR) – N900
2. Standard: BHMA Certified A156.3, Grade 1.
3. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
4. Fire Exit Devices: Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.
5. Electrified Options: As indicated in hardware sets, provide electrified exit device options including: electric latch retraction, electric dogging, outside door trim control, exit alarm, delayed egress, latchbolt monitoring, lock/unlock status monitoring, touchbar monitoring and request-to-exit signaling. Unless otherwise indicated, provide electrified exit devices standard as fail secure.
6. Self-Contained Electronic Exit Trim: Internal, battery-powered, self-contained electronic ANSI A156.3 Grade 1 exit device consisting of electronically motor driven locking mechanism, integrated proximity card reader with keypad and specified accessories. Provide key override, low-battery detection and warning, LED status indicators, and ability to program at the device for the functions indicated.
 - a. Self Contained Electronic Exit Device Trim:
 - 1) Corbin Russwin Hardware (CR) - Access 800 AC2 Series.
 - 2) Sargent Manufacturing (SA) - Profile v.G1 Series.
 - 3) Von Duprin (VD) - CM900 Series.
7. Vertical Rod Exit Devices: Provide and install interior surface and concealed vertical rod exit devices as Less Bottom Rod (LBR) unless otherwise indicated.
8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
9. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

H. ACCESSORIES FOR PAIRS OF DOORS

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Keyed Removable Mullions:

- 1) Corbin Russwin Hardware (CR).
 - 2) Sargent Manufacturing (SA).
 - 3) Yale Security Group (YA).

2. Standards: Comply with the following:

- a. Removable Mullions: BHMA A156.3.

I. CLOSERS

1. Manufacturers: Subject to compliance with requirements, provide products by one the following:

- a. Surface-Mounted Closers (Heavy Duty):

- 1) Corbin Russwin Hardware (CR) - DC8000 Series with heavy duty arms
 - 2) Norton Door Controls (NO) - 7500 Series with heavy duty arms.
 - 3) Sargent Manufacturing (SA) - 351 Series with heavy duty arms.
 - 4) Yale Security Group (YA) - 4400 Series with heavy duty arms.

- b. Surface-Mounted Closers (Standard Duty):

- 1) Corbin Russwin Hardware (CR) - DC3000 Series.
 - 2) LCN Door Closers (LC) - 1460 Series.
 - 3) Norton Door Controls (NO) - 8500 Series.
 - 4) Sargent Manufacturing (SA) - 1331 Series.
 - 5) Yale Security Group (YA) - 3500 Series.

2. Standards: Comply with the following:

- a. Closers: BHMA Certified A156.4, Grade 1

3. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide non-handed, factory-sized closers adjustable to meet field conditions and requirements for opening force.

4. Closer Options: As indicated in hardware sets, provide door closer options including: delayed action, hold open arms, extra duty parallel arms, positive stop/hold open arms, and compression stop/hold open arms. Even if not indicated in hardware sets, provide special mounting brackets, spacers and drop plates for a complete and proper installation. Through bolt type mounting is required as indicated in the door hardware sets.

J. OPERATING AND PROTECTIVE TRIM UNITS

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Metal and Plastic Protective Trim Units:
 - 1) McKinney Products (MC).
 - 2) Rockwood Manufacturing (RO).
 - 3) Trimco Manufacturing (TR).
 - b. Door Pulls:
 - 1) McKinney Products (MC).
 - 2) Rockwood Manufacturing (RO).
 - 3) Trimco Manufacturing (TR).
2. Standard: BHMA Certified A156.6.
3. Materials: Fabricate protection plates from the following:
 - a. Stainless Steel: .050 inches thick, beveled four sides (B4E) with countersunk screw holes.
 - b. Plastic: 1/8 inches thick, beveled four sides (B4E) with countersunk screw holes.
 - c. Furnish protection plates sized two inches less than door width (LDW) on push side and by height specified in door hardware sets.
4. Push/Pull Plates: .050 inch thick, 4 inches wide by 16 inches high with square corners and beveled edges, secured with exposed screws.
 - a. Straight Pull Design: 1-inch round diameter with 10-inch centers and 1 1/2-inch clearance from face of door.
 - b. Offset Pull Design: 1-inch round diameter pull, with 10-inch centers and clearance of 1-1/2 inches from face of door with offset of 45 degrees.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in door hardware sets.

K. STOPS AND HOLDERS

1. Stops and Bumpers: Provide wall stops for doors unless floor or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Where floor or wall stops are not appropriate, provide overhead stops and/or holders.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Stops and Holders:
 - 1) McKinney Products (MC).
 - 2) Rockwood Manufacturing (RO).
 - 3) Trimco Manufacturing (TR).
 - b. Combination Overhead Stops and Holders:

- 1) Glynn-Johnson (GJ) - 100 Concealed and 90 Surface Series
 - 2) Rixson Hardware (RX) - 1 Concealed and 10 Surface Series.
 - 3) Sargent Hardware (SA) - 600 Concealed and 500 Surface Series.
3. Standards: Comply with the following:
 - a. Stops and Bumpers: BHMA Certified A156.16, Grade 1.
 - b. Combination Overhead Holders and Stops: BHMA Certified A156.8, Grade 1.
4. Silencers for Metal Door Frames: BHMA Grade 1; neoprene or rubber, minimum diameter 1/2 inch fabricated for drilled-in application to frame. Provide (3) per single door and (2) per paired door frame if applied gasketing is not specified in Hardware Sets.

L. DOOR THRESHOLDS, WEATHERSTRIPPING AND GASKETING

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Door Thresholds, Weatherstripping and Gasket Seals:
 - 1) McKinney Weatherstripping Products (MW).
 - 2) Pemko Manufacturing (PE).
 - 3) Zero Manufacturing (ZE).
2. Standard: BHMA Certified A156.22.
3. General: Provide continuous weatherstrip seal on exterior doors and smoke, light, or sound gasketing on interior doors where specified. Provide non-corrosive fasteners for exterior applications.
 - a. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame. Install header seal before mounting door closer arms.
 - b. Meeting Stile Astragals: Fasten to meeting stiles, forming seal when doors are closed.
 - c. Door Sweep: Apply to bottom of door, forming seal with threshold when door is closed.
4. Basic Sound Seal Requirement: Whether indicated on the drawings or not, provide gasketing MCKS88D at sound rated wall types and at the following areas for limiting of sound transmission: private offices, conference rooms, private toilet rooms, corridor openings, and similar sound sensitive area.
5. 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.
 - a. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
6. 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.

- a. Intumescent Seals and Gasketing: Provide concealed, Category A type gasketing systems on assemblies where an intumescent seal is required to meet IBC and UL-10C positive pressure labeling.

M. FABRICATION

1. 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.

N. FINISHES

1. Standard: Comply with BHMA A156.18.
2. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
3. Where specified, finishes on locksets, latchsets, exit devices and push/pull trim to incorporate an FDA recognized antimicrobial coating (MicroShield™) listed for use on equipment as a suppressant to the growth and spread of a broad range of bacteria, algae, fungus, mold and mildew.
4. BHMA Designations: Comply with base material and finish requirements indicated by the following:
 - a. BHMA 626: Satin chromium plated over nickel, over brass or bronze base metal.
 - b. BHMA 630: Satin stainless steel, over stainless-steel base metal.
 - c. BHMA 689: Aluminum painted, over any base metal.

PART 3 - EXECUTION

- A. Examine doors and frames, 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. Examine roughing-in for electrical source power to verify actual locations of wiring connections before electrified door hardware installation.
- C. Examine pathway elements intended for cables. Check raceways and other elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation.
- D. Examine roughing-in for LAN and control cable conduit systems to PCs, controllers, card readers, and other cable-connected devices to verify actual locations of conduit and back boxes before device installation.
- E. 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. Steel Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.
- C. Doors at access controlled openings to be properly prepared to receive specified electrified and access control hardware connections without additional in-field modifications.

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.
- 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. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
 - 3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- C. Boxed Power Supplies: Verify locations with Architect.
 - 1. Configuration: Provide the least number of power supplies required to adequately serve doors with access control equipment.
- D. Install cables and wiring according to requirements in Division 28 Section "Conductors and Cables for Electronic Safety and Security."
 - 1. RS-232 Cabling: Install at a maximum distance of 50 feet.
 - 2. RS-485 Cabling: Install at a maximum distance of 4000 feet.
 - 3. Card Readers and Keypads: Install number of conductor pairs recommended by manufacturer for the functions specified.
 - 4. Electromechanical Hardware: Install appropriate number of conductor pairs, in the wire gage (AWG) recommended by manufacturer, corresponding to the electronic locking functions specified, amperage drawn and distances covered between the power supplies, transfer hinges, electrified hardware and access control equipment.
- E. Final connect the system control switches (readers, keypads, biometrics), monitoring, and signaling equipment to the related Controller devices at each opening to properly operate the installed electromechanical door hardware according to operational narratives.
- F. [Retrofitting: Install each door hardware and access control item to comply with manufacturer's 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.]

- G. System Software: Install, and test software and databases for the complete and proper operation of systems involved. Assign software license(s) to Owner.

3.4 FIELD QUALITY CONTROL

- A. Comply with AIA A201 1997, section 3.3.1, which reads as follows: "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."
- B. Field Inspection: Engage a factory authorized service representative to perform a final inspection of the installed door hardware and integrated access control system and state in report whether installed work complies with or deviates from requirements, including whether each component representing the opening assembly is properly installed, adjusted, operating and performing to system operational narratives.
 - 1. Testing Schedule: Test each circuit and component of each system. Test system components with battery backup on battery power for a period of not less than 10 percent of the calculated battery operating time.
 - a. Inspection: Verify that units and controls are properly installed, connected, and labeled and that interconnecting wires and terminals are identified.
 - b. Pre-testing: Program and adjust the system and pretest all components, wiring, and functions to verify they conform to specified requirements. Replace malfunctioning or damaged items with new items.
 - c. Acceptance Test Schedule: Schedule tests after pre-testing has been successfully completed and system has been in normal functional operation for at least 2 weeks.
 - d. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

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.
 - 1. Door Closers: Adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
- B. Six-Month Adjustment: Approximately six months after date of Substantial Completion, Installer shall perform the following:
 - 1. Examine and readjust each item of door and access control hardware as necessary to ensure proper operating function of doors.
 - 2. Consult with and instruct Owner's personnel on recommended maintenance procedures.

3. Replace door hardware and access control equipment that has deteriorated or failed due to faulty design, materials, or installation of door hardware units.

3.6 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper finish and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Engage a factory-authorized representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and the integrated access control system.

END OF SECTION 08710

SECTION 08800 – GLAZING

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Glass.
- B. Glazing compounds and accessories.

1.02 RELATED SECTIONS

- A. Section 07260 - Vapor Retarders.
- B. Section 07900 - Joint Sealers: Sealant and back-up material.
- C. Section 08110 - Steel Doors and Frames: Glazed doors and borrowed lites.
- D. Section 08211 Flush Wood Doors: Glazed doors.
- E. Section 08410 - Metal-Framed Storefronts.
- F. Section 08520 Aluminum Windows: Glazed windows.
- G. Section 10800 - Toilet, Bath, and Laundry Accessories: Mirrors.

1.03 REFERENCES

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. ASTM C 864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005.
- C. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2005.
- D. ASTM C 1036 - Standard Specification for Flat Glass; 2001.
- E. ASTM C 1048 Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass; 2004.
- F. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass; 2003.
- G. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2005a.
- H. ASTM E 773 - Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units; 2001 .
- I. ASTM E 774 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units; 1997.
- J. ASTM E 1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2004.
- K. K ASTM E 2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2002.
- L. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2004.
- M. GANA (SM) - FGMA Sealant Manual; Glass Association of North America; 1990.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide glass and glazing materials for continuity of building enclosure vapor retarder and air barrier:
 - 1. In conjunction with vapor retarder and joint sealer materials described in other sections.
 - 2. To utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.
 - 3. To maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.
- B. Select type and thickness of exterior glass to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with local building code.
 - 1. Use the procedure specified in ASTM E 1300 to determine glass type and thickness.
 - 2. Limit glass deflection to 1/200 or flexure limit of glass, whichever is less, with full recovery of glazing materials.
 - 3. Thicknesses listed are minimum.

1.05 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- D. Samples: Submit two samples 8" x 8" inch in size of glass and plastic units, showing coloration

and design.

- E. Certificates: Certify that products meet or exceed specified requirements.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA Glazing Manual and FGMA Sealant Manual for glazing installation methods.

1.07 MOCK-UP

- A. Provide mockup of window including glass and integral blind.
- B. Locate where directed.
- C. Mockup may remain as part of the Work.

1.08 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Do not install glazing when ambient temperature is less than 50 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.10 WARRANTY

- A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
- B. Provide a five (5) year warranty to include coverage for dual sealed glass units from seal failure, interpane dusting or misting, and replacement of same.
- C. Provide a five (5) year warranty to include coverage for delamination of laminated glass and replacement of same.

1.11 MAINTENANCE PRODUCTS

- A. Provide two of each glass size and each glass type, of insulated glass units.

PART 2 PRODUCTS

2.01 FLAT GLASS MATERIALS

- A. All exterior glazing to be bronze.
 - 1. Glazing to be 1" insulated tempered units in sizes as shown on Drawings
- B. Acceptable Manufacturers:
 - 1. AFG Industries, Inc: www.afgglass.com.
 - 2. Pilkington Building Products North America: www.pilkington.com.
 - 3. PPG Industries, Inc: www.ppg.com.
 - 4. Visteon Glass Systems: www.visteon.com/floatglass.
 - 5. Substitutions: Refer to Section 01600 - Product Requirements.
- C. Safety Glass: Clear; fully tempered.
 - 1. Laminated with 0.030 inch thick plastic interlayer; comply with ASTM C 1172
 - 2. Comply with ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select) and ASTM C 1048.
 - 3. Comply with 16 CFR 1201 test requirements for Category II.
 - 4. Where glazing is to be installed in fire-rated partition, provide glazing that is also fire-protection rated in accordance with applicable code.
 - 5. 1/4 inch minimum thick.
 - 6. Provide this type of glazing in the locations required by code.
 - a. Glazed lites in doors except fire doors.
 - b. Glazed sidelights to doors.

2.02 GLAZING SEALANTS

- A. System Description:
 - 1. Exterior aluminum doors, windows and frames:
 - a. Lights over 180 united inches: Type 1 sealant.
 - b. Lights less than 180 united inches: Type 1 or 2 sealant.
 - c. Interior Glazing: Type as specified

2. Glazing sealants:
 3. Exterior glazing: One-component Silicon rubber-based sealant or acrylic terpolymer solvent based sealant by one of the following:
 - a. Dow Coming:999 Building / Glazing Sealant
 - b. General Electric: Silglaze
 - c. Tremco: Mono
 4. Interior glazing: Acrylic-latex, butyl rubber, glazing tape similar to Norton Performance Plastics Corp. "Norseal V-780" foam tape, or DAP "10-12"
 5. Sealant for fire-rated glazing: Type required for fire rating.
 6. Preformed sealant tape: Polymerized butyl rubber or polyvinyl chloride of type recommended by liquid glazing sealant manufacturer. Tape floor lights over 100 united inches: Pre shimmed type
 7. Sealant color: To be selected by Engineer from samples submitted.
- B. Manufacturers:
1. Bostik, Inc: www.bostik-us.com.
 2. GE Plastics: www.geplaslics.com.
 3. Pecora Corporation: www.pecora.com.
 4. BASF Construction Chemicals, Inc: www.chemrex.com.
 5. Substitutions: Refer to Section 01600 - Product Requirements.
- C. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.

2.04 GLAZING ACCESSORIES

- A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C 864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C 664 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.
- C. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C 664 Option I;
- D. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. A Verify that openings for glazing are correctly sized and within tolerance.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant.
- D. Install sealants in accordance with ASTM C 1193 and FGMA Sealant Manual.
- E. Install sealant in accordance with manufacturer's instructions

3.03 INSTALLATION • EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)

- A. A Place setting blocks at 1/4 points with edge block no more than 6 inches from comers.
- B. Rest glazing on selling blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.04 INSTALLATION • INTERIOR WETIDRY METHOD (TAPE AND SEALANT)

- A. A Cut glazing tape to length and install against permanent stops, projecting 1/16 inch (1 .6 mm) above sight line.
- B. Place selling blocks at 1/4 points with edge block no more than 6 inches from comers.

- C. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
- D. Install removable stops, spacer shims inserted between glazing and applied stops at 24 inch intervals, 1/4 inch below sight line.
- E. Fill gaps between pane and applied stop with sealant to depth equal to bite on glazing, to uniform and level line.
- F. Trim protruding tape edge.

3.05 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

3.06 PROTECTION OF FINISHED WORK

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

3.07 SCHEDULE

- A. All other units as scheduled on drawings and/or to meet all building and safety codes.

END OF SECTION

SECTION 09260 - GYPSUM BOARD ASSEMBLIES

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Fire rated area separation walls.
- B. Gypsum sheathing.
- C. Cementations backer board.
- D. Gypsum wallboard.
- E. Textured finish system.

1.02 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: Building framing.
- B. Section 07212 - Board and Batt Insulation: Acoustic insulation.
- C. Section 07900 - Joint Sealers: Acoustic sealant.
- D. Section 09111 - Non-Load bearing Metal Framing.

1.03 REFERENCES

- A. ANSI A1 08.11 - American National Standard for Interior Installation of Cementations Backer Units; 1999 (R2005).
- B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementations Backer Units; 1999 (R2005).
- C. ASTM C 36/C 36M - Standard Specification for Gypsum Wallboard; 2001.
- D. ASTM C 442/C 442M - Standard Specification for Gypsum Backing Board, Gypsum Core board, and Gypsum Shaft liner Board; 1999a.
- E. ASTM C 475/C 475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002.
- F. ASTM C 630/C 630M - Standard Specification for Water-Resistant Gypsum Backing Board; 2000.
- G. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal insulation for Light Frame Construction and Manufactured Housing; 2001.
- H. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2004.
- I. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board; 2005.
- J. ASTM C 954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2004.
- K. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2004.
- L. ASTM C 1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2005.
- M. ASTM C 1396/C 1396M - Standard Specification for Gypsum Board; 2004.
- N. GA-226 - Application of Gypsum Board to Form Curved Surfaces; Gypsum Association; 1996.
- O. GA-253 - Recommended Specifications for the Application of Gypsum Sheathing; Gypsum Association; 1999.
- P. GA-600 - Fire Resistance Design Manual; Gypsum Association; 2006.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- D. Samples: Submit two samples of gypsum board ceiling finished with proposed texture application, 12 x 12 inches in size, illustrating finish color and texture.

1.05 QUALITY ASSURANCE

- A. Perform in accordance with ASTM C 840. Comply with requirements of GA-600 for fire-rated

assemblies.

PART 2 PRODUCTS

2.01 GYPSUM BOARD MATERIALS

- A. Manufacturers:
 - 1. G-P Gypsum Corporation: www.gp.com/gypsum.
 - 2. National Gypsum Company: www.nationalgypsum.com.
 - 3. USG: www.usg.com.
- B. Gypsum Wallboard: ASTM C 1396/C 1396M. Sizes to minimize joints in place; ends square cut.
 - 1. Fire Resistant Type: Complying with Type X requirements; UL or WH rated.
 - a. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X.
 - b. Other Applications: Use at all vertical surfaces and all horizontal surfaces, unless otherwise indicated.
 - c. Application: Vertical surfaces, unless otherwise indicated.
 - d. Thickness: 5/8 inch.
 - e. Edges: Tapered.
 - 2. Ceiling Board: Special sag-resistant type.
 - a. Application: Ceilings, unless otherwise indicated.
 - b. Thickness: 5/8 inch.
 - c. Edges: Tapered.
- C. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M; ends square cut.
 - 1. Application: in all areas requiring to be moisture-resistant except behind tile.
 - 2. Core Type: Type X, as indicated.
 - 3. Thickness: 5/8 inch.
 - 4. Edges: Tapered.
- D. Gypsum Shaft wall or Core board: ASTM C 1396/C 1396M; Type X core; sizes to minimize joints in place; 1 inch thick; square, tongue and groove, or double beveled edges, ends square cut.

2.02 FIBERGLASS REINFORCED BOARD MATERIALS

- A. Cementations Backer Board: ANSI A118.9, aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces, 1/2 inch thick for use behind tile.

2.03 ACCESSORIES

- A. Acoustic Insulation: ASTM C 665; preformed glass fiber, friction fit type, unfaced.
- B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
- C. Finishing Accessories: ASTM C 1047, galvanized steel or rolled zinc, unless otherwise indicated.
 - 1. Types: As detailed or required for finished appearance.
 - 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
- D. Joint Materials: ASTM C 475 and as recommended by gypsum board manufacturer for project conditions.
 - 1. Tape: 2 inch wide, coated glass fiber tape for joints and corners. except as otherwise indicated.
 - 2. Tape: 2 inch wide, creased paper tape for joints and comers, except as otherwise indicated.
 - 3. Ready-mixed vinyl-based joint compound.
 - 4. Powder-type vinyl-based joint compound.
- E. Textured Finish Materials: Latex-based compound; plain. .
- F. Screws: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.
- G. Screws: ASTM C 954; steel drill screws for application of gypsum board to load bearing steel studs.
- H. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Comply with ASTM C 754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members at 16 inches on center.
 - 1. Level ceiling system to a tolerance of 1/1200.
 - 2. Laterally brace entire suspension system.
- C. Studs: Space studs as permitted by standard.
 - 1. Extend partition framing to underside of roof framing in all cases and tie securely into same.
 - 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
 - 3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- E. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
- F. Acoustic Furring: Install resilient channels at maximum 24 inches on center. Locate joints over framing members.
- G. Blocking: Install blocking for support of plumbing fixtures, toilet partitions, toilet accessories, and hardware. Comply with Section 06114 for wood blocking.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.04 GYPSUM BOARD INSTALLATION

- A. Comply with ASTM C 840 and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
 - 1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of listing authority.
- D. Gypsum Sheathing: Comply with GA-253. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 - 1. Immediately after installation. Protect from weather by application of No. 15 building paper.
- E. Gypsum Soffit Board: Install perpendicular to framing, with staggered end joints over framing members or other solid backing.
- F. Cementations Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- G. Installation on Metal Framing: Use screws for attachment of all gypsum board except face layer of non-rated double-layer assemblies, which may be installed by means of adhesive lamination.
- H. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
 - 2. At exterior soffits, not more than 30 feet apart in both directions.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.06 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- B. Finish gypsum board in scheduled areas in accordance with levels defined in ASTM C 840 and

as scheduled below.

- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - a. Feather coats of joint compound so that camber is maximum 1/32 inch.
 - b. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
- D. Fill and finish joints and corners of cementations backing board as recommended by manufacturer.

3.07 TEXTURE CEILING FINISH

- A. Apply finish texture coating by means of trowel in accordance with manufacturer's instructions and to match approved sample.

3.08 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.09 FINISH LEVEL SCHEDULE

- A. Level 1: Above finished ceilings concealed from view.
- B. Level 2: Utility areas and areas behind cabinetry.
- C. Level 3: Walls scheduled to receive textured wall finish.
- D. Level 4: Walls and ceilings scheduled to receive flat or eggshell paint finish.
- E. Level 5: Walls and ceilings scheduled to receive semi-gloss or gloss paint finish.

END OF SECTION

SECTION 09511 - SUSPENDED ACOUSTICAL CEILINGS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units identified on drawings as ACP-1

1.02 RELATED SECTIONS

- A. Section 07212 - Board and Batt Insulation: Acoustical insulation.
- B. Section 07900 - Joint Sealers: Acoustical sealant.
- C. Section 13851 - Fire alarm System: Fire alarm components in ceiling system.
- D. Section 13925 - Fire Suppression Sprinklers: Sprinkler heads in ceiling system.
- E. Section 16510 - Interior Luminaries: Light fixtures in ceiling system.

1.03 REFERENCES

- A. ASTM C 635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2004.
- B. ASTM C 636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2004.
- C. ASTM E 580 - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint; 2002.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components.
- D. Samples: Submit two full size samples illustrating material and finish of acoustical units.
- E. Manufacturer's Installation Instructions: Indicate special procedures.

1.05 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

1.07 PROJECT CONDITIONS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Install acoustical units after interior wet work is dry.

1.08 EXTRA MATERIALS

- A. See Section 01600 - Product Requirements, for additional provisions.
- B. Provide 150 sf of each type of acoustical unit for Owner's use in maintenance of project.

PART 2 PRODUCTS

2.01 ACOUSTICAL UNITS

- A. Manufacturers:
 - 1. Armstrong World Industries, Inc; Cirrus

- B. Classification: Provide fire-resistance rated panels complying with ASTM E1264 for type, form, and pattern as follows:
 - 1. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
 - 2. Pattern: E (lightly textured).
- C. Color: White
- D. LR: Not less than 0.85
- E. NRC: Not less than 0.60
- F. CAC: Not less than 35
- G. Edge/ Joint Detail: Angular tegular. Reveal sized to fit flange of exposed suspension system members.
- H. Thickness: $\frac{3}{4}$ inch
- I. Modular size; 24"x24"
- J. Antimicrobial Treatment: Coating Based

2.02 SUSPENSION SYSTEM(S)

- A. Manufacturers:
 - 1. Armstrong World Industries, Inc; Product Exposed Prelude 15/16" Tees: www.armstrong.com.
 - 2. Substitutions: See Section 01600 - Product Requirements.
- B. Suspension Systems - General: ASTM C 635; die cut and interlocking components, with stabilizer bars, clips, splices, and perimeter moldings as required.
- C. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; Intermediate-duty.
 - 1. Profile: Tee; 15/16 inch wide face.
 - 2. Construction: Double web.
 - 3. Finish: White painted.

2.03 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
 - 1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid. note that contractor to caulk between 'L' mold and wall around perimeter of all walls
- C. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C 636, ASTM E 580, and manufacture's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Locate system on room axis according to reflected plan.
- D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.

- J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.

3.03 INSTALLATION- ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
 - 1. Cut to fit irregular grid and perimeter edge trim.
 - 2. Make field cut edges of same profile as factory edges.
 - 3. Double cut and field paint exposed reveal edges.
- G. Where round obstructions occur, provide preformed closures to match perimeter molding.

3.04 ERECTION TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09651 - RESILIENT SHEET FLOORING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Resilient linoleum sheet flooring.
 - 1. Homogeneous linoleum sheet flooring, adhesive and heat welded seams installation.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM F 2034 for Linoleum Sheet Flooring
 - 2. ASTM E 648-88 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source.
 - 3. ASTM E 662-83 Test Method for Specific Density of Smoke Generated by Solid Materials.
 - 4. ASTM F 710-86 Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.
 - 5. ASTM F 970-87 Test Method for Static Load Limit.
 - 6. ASTM 492 for Impact Insulation
- B. Federal Specification (Fed Spec):
 - 1. Fed Spec L-F-475A Floor Covering, Vinyl, Surface (Tile and Roll), with Backing, February 1971.
- C. National Fire Protection Association (NFPA):
 - 1. NFPA 253-1984 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source.
 - 2. NFPA 258-1989 Test Method for Specific Density of Smoke Generated by Solid Materials.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide flooring which has been manufactured, fabricated and installed to performance criteria certified by manufacturer without defects, damage, or failure

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with "Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA product sheet, for specified products.
- C. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors, patterns and textures.
- D. Samples: Submit selection and verification samples for finishes, colors, and textures.
- E. Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.
 - 3. Manufacturer's Instructions: Manufacturer's installation instructions.
 - 4. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
- F. Contractor to submit letter stating that both the contractor and the flooring manufacturer agree that the flooring substrate is suitable for application of the floor covering. Include language from the manufacturer that the means and methods to be used including all specific materials, ambient conditions, etc. have been reviewed and are satisfactory. Do not proceed until provided.
- G. Closeout Submittals: Submit the following:
 - 1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 2. Warranty: Warranty documents specified herein.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project
- B. Regulatory Requirements:
 - 1. Fire Performance Characteristics: Provide resilient linoleum sheet flooring with the following fire performance characteristics as determined by testing products in accordance with ASTM method indicated below by a certified testing laboratory or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - a. Critical Radiant Flux: Class 1 Rating per NFPA 253 (ASTM 648) (0.45 watts/cm² or greater).
 - b. Smoke Density: Less than 450 per NFPA 258 (ASTM E 662).
- C. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Engineer's acceptance of finish color, texture and pattern, and workmanship standard. Comply with Division 1 Quality Control (Mock-Up Requirements) Section.
 - 1. Mock-Up Size: 100 sf
 - 2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
 - 3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.
- D. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.
- E. Pre-Installation Testing: Conduct pre-installation testing as required by manufacturer including site review with manufacturer of flooring

1.06 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.
 - 1. Material should be stored in areas that are fully enclosed, weather tight with the permanent HVAC system set at a uniform temperature of at least 66 degrees F (20 degrees C) for 72 hrs. prior to, during and after installation.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, Areas to receive flooring shall be clean, fully enclosed, weather tight with the permanent HVAC set at a uniform temperature of at least 66 degrees F (20 degrees C). The flooring material should be conditioned in the same manner. Maximum temperature should not exceed 100 degrees F after installation.
- B. Temperature Requirements: Maintain air temperature in spaces where products will be installed for time period before, during, and after installation as recommended by manufacturer.
 - 1. Temperature Conditions: 66 degrees F (20 degrees C) for 72 hours prior to, during and after installation.
- C. Existing Conditions: All concrete to have a minimum of a skim coat of floor leveler or as required by manufacturer. Verify thickness of leveling slab below and verify a minimum of a skim coat required. Contractor to determine whether any additional action is required to slab prior to skim coating (bead blasting or grinding). Note that any area where VCT is removed must be bead blasted
- D. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.08 SEQUENCING AND SCHEDULING

- A. Finishing Operations: Install tile flooring after finishing operations, including painting and ceiling operations, have been completed.

- B. Concrete Curing: Do not install tile flooring over concrete substrates until substrates have cured and are dry to bond with adhesive as determined by resilient flooring manufacturer's recommended bond, moisture test and pH test

1.09 WARRANTY

- A. Project Warranty: Refer to "Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
 - 1. Warranty Period: Five (5) year limited warranty commencing on Date of Substantial Completion.

1.10 MAINTENANCE

- A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals (Maintenance Materials) Section.
 - 1. Quantity: Furnish quantity of flooring units equal to 5% of amount installed.
 - 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 PRODUCTS

2.01 RESILIENT SHEET FLOORING

- A. Manufacturer: Mannington Commercial.
Contact Mannington Commercial, P.O. Box 12281, Calhoun, GA 30703-7004; Telephone: 800 241 2262,
706 629 7301; Fax: 706 625 6210
Proprietary Product(s): SV-1

Mannington Linoleum Sheet and Linoleum Adhesive.

- 1. Description: Homogeneous sheet linoleum Pattern and color shall extend throughout total thickness of material.
 - 2. Size: 12'
 - 3. Wearlayer thickness: .020 inches
 - 4. Overall thickness: .080 inches
 - 5. Pattern and Color: As shown and detailed on drawings
 - 6. Adhesive:
 - a. Porous Substrates: Mannington V-82/Full spread
 - b. Non-Porous Substrate: Mannington V-95/Full spread
 - 7. Heat Welding Rod: Mannington Commercial solid color welding rod
 - 8. Chemical Seam Sealer: MLG 33
- C. Product Criteria Forms: Refer to Product Criteria Forms as an attachment to this section.
 - 1. Product Forms: Subject to compliance with specified requirements, provide products specified in each Product Data Sheet at end of this section.

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

2.03 RELATED MATERIALS

2.04 SOURCE QUALITY

- A. Source Quality: Obtain flooring product materials from a single manufacturer.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions, and product carton instructions for installation.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions.
- B. Material Inspection: In accordance with manufacturer's installation requirements, visually inspect materials prior to installation. Material with visual defects shall not be installed and shall not be considered as a legitimate claim.

3.03 REPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
- B. Surface Preparation:
 - 1. General: Prepare floor substrate in accordance with manufacturer's instructions.
 - 2. Floor Substrate: Prepare floor substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as dust, paint, grease, oils, solvent, curing and hardening compounds, sealers, asphalt and old adhesive residue.
 - 3. Concrete Floor Substrate: Concrete floor substrate shall have a minimum compressive strength of 3500 psi. Refer to Division 3 Concrete sections for patching and repairing crack materials, and leveling compounds with portland cement-based compounds. Do not use or install flooring over gypsum-based leveling or patching materials.
 - a. Reference Standard: Comply with ASTM F 710 Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.
- B. Concrete Moisture Test Perform moisture tests on concrete floors regardless of the age or grade level with a minimum of three tests for the first 1000 square feet (93 m²). The test shall be a calcium chloride test. One test shall be conducted for every 1000 sq. ft. of flooring. The test shall be conducted around the perimeter of the room, at columns and where moisture may be evident. The moisture emission from the concrete shall not exceed 5.0 lbs per. 1000 sq. ft. (2.4kg/100 m²) in 24 hrs. For the most accurate results, the weight of the calcium chloride dish shall be made on the job site at the start and end of each test. A diagram of the area showing the location and results of each test shall be submitted to the engineer, general contractor or end user. If the test results exceed the limitations, the installation shall not proceed until the problem has been corrected.
- C. Concrete pH Test Perform pH tests on concrete floors regardless of the age or grade level. If the pH is greater than 10, it must be neutralized prior to beginning the installation.

3.04 INSTALLATION

- A. Adhesive Flooring Installation: Cut required length of linoleum flooring from roll, allowing enough material to extend up the wall 4 to 6 inches at either end. Layout and position sheet flooring so that any seams will fall at least 6 inches from underlayment joints or saw cuts in concrete substrate. Scribe and cut flooring material to shape of vertical surfaces, including walls and partitions. Apply adhesive and lay sheet flooring into wet adhesive and roll with a 100 pound roller. Install sheet flooring square with room axis.
 - 1. Adhesive, Seamless Flooring Installation: Rout out seams and heat weld together with complementary colored heat welding rod of complimentary composition in accordance with resilient flooring, manufacturer's recommendations.
 - 2. Adhesive Flooring and Flash Caved Base Installation: Extend flooring up the wall in a flash-coved method to a height of 4 inches or 6 inches (102 or 152 mm), as indicated.
 - 3. Adhesive Material Installation: Use trowel as recommended by flooring manufacturer for specific adhesive. Spread at a rate of approximately 150 sq. ft./gal. (3.7 m²) as recommended by flooring manufacturer.
- B. Installation Techniques:
 - 1. Where demountable partitions and other items are indicated for installation on top of finished flooring, install flooring before these items are installed.
 - 2. Scribe, cut fit flooring to butt tightly to vertical surfaces, permanent fixtures and built-in furniture, including pipes, outlets, edgings, thresholds, nosings, and cabinets.
 - 3. Extend flooring into toe spaces, door reveals, closets, and similar openings.
 - 4. Install flooring on covers for telephone and electrical ducts, and similar items occurring within finish floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.
 - 5. Do not install resilient flooring over expansion joints. Use expansion joint covers manufactured for use with resilient flooring. Refer to other specification sections for expansion joint covers.

6. Adhere resilient flooring to substrate without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed installation.
 - a. Use adhesive applied to substrate in compliance with flooring manufacturer's recommendations, including those for trowel notching, adhesive mixing, and adhesive open and working times.
7. Roll resilient flooring as required by resilient flooring manufacturer.
- C. Finish Flooring Patterns: As shown on Drawings.

3.05 FIELD QUALITY REQUIREMENTS

- A. Manufacturer's Field services: Upon Owner's request and with at least 72 hours notice, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.
 1. Site Visits: Three minimum; one pre installation, one during construction and one after installation is complete

3.06 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
 1. Remove visible adhesive and other surface blemishes using cleaning methods recommended by tile floor manufacturer.
 2. Sweep and vacuum floor after installation.
 3. Do not wash floor until after time period recommended by tile flooring manufacturer.
 4. Damp-mop tile flooring to remove black marks and soil.

3.07 PROTECTION

- A. Protection: protect install product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of Substantial Completion.

3.08 INITIAL MAINTENANCE PROCEDURES

- A. General: Include in Contract Sum Amount cost for initial maintenance procedures, and execute procedures after flooring installation as recommended by flooring manufacturer.
- B. Initial maintenance "Starter Kit" supplied by manufacturer. Initial maintenance to be conducted by flooring contractor.
- C. Drying Room Yellowing: Expose installed linoleum to either natural or artificial light to allow "drying room yellowing" (the film is a natural occurrence of the oxidation of the linseed oil in linoleum products) on installed linoleum flooring to disappear prior to initiating temporary protection procedures.

END OF SECTION

SECTION 09680 - CARPET

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Carpet, direct-glued
- B. Accessories.

1.02 REFERENCES

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2005.
- B. CRI 104 - Standard for Installation of Commercial Textile Floor covering Materials; Carpet and Rug Institute; 2002.
- C. CRI (GLA) - Green Label Testing Program - Approved Adhesive Products; www.carpet-rug.org; current edition.
- D. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2006.

1.03 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate seaming plan, method of joining seams, direction of carpet pile and pattern, location of edge moldings and edge bindings.
- C. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- D. Samples: Submit two samples 24" x 24" inch in size illustrating color and pattern for each carpet and cushion material specified.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing carpet with minimum three years experience.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Store materials in area of installation for minimum period of 24 hours prior to installation.
- B. Ventilate installation area during installation and for 72 hours after installation.

1.06 EXTRA MATERIALS

- A. See Section 01600 - Product Requirements, for additional requirements.
- B. Provide 50 sq ft of carpeting of each type, color, and pattern specified.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Carpet: CA - 1 & CA-2
 - 1. Mannington: www.mannington.com

2.02 ACCESSORIES

- A. Sub-Floor Filler: Type recommended by carpet manufacturer.
- B. Adhesives - General: Compatible with materials being adhered; maximum VOC content of 50 g/L; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance is acceptable.
- C. Adhesives: Compatible with materials being adhered.
- D. Seam Adhesive: Recommended by manufacturer.
- E. Contact Adhesive: Compatible with carpet material; releasable type.
- F. Backing: "Infinity" modular reinforced vinyl composite closed cell polymer with recycled content

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive carpet.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet.
- C. Verify that concrete sub-floor surfaces are ready for carpet installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by carpet manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Remove existing carpet and carpet cushion.
- B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.
- C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- D. Clean substrate.

3.03 INSTALLATION - GENERAL

- A. Install carpet and cushion in accordance with manufacturer's instructions and CRI 104.
- B. Verify carpet match before cutting to ensure minimal variation between dye lots.
- C. Layout carpet and locate seams in accordance with shop drawings:
 - 1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
 - 2. Do not locate seams perpendicular through door openings.
 - 3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
 - 4. Locate change of color or pattern between rooms under door centerline.
 - 5. Provide monolithic color, pattern, and texture match within anyone area.
- D. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.

3.04 DIRECT-GLUED CARPET

- A. Double cut carpet seams, with accurate pattern match. Make cuts straight, true, and unfrayed. Apply seam adhesive to cut edges of woven carpet immediately.
- B. Apply contact adhesive to floor uniformly at rate recommended by manufacturer. After sufficient open time, press carpet into adhesive.
- C. Apply seam adhesive to the base of the edge glued down. Lay adjoining piece with seam straight, not overlapped or peaked, and free of gaps.
- D. Roll with appropriate roller for complete contact of adhesive to carpet backing.
- E. Trim carpet neatly at walls and around interruptions.

3.05 CLEANING

- A. Remove excess adhesive from floor and wall surfaces without damage.
- B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09900 - PAINTS AND COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Paints, stains, transparent coatings, and opaque stains.
- B. Materials for back priming woodwork, execution of which is specified elsewhere.
- C. Preparation of new surfaces for painting.
- D. Preparation of existing surfaces for re-painting.

1.02 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications: Shop priming.

1.03 REFERENCES

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each paint and coating product to be used, including:
 - 1. Product characteristics.
 - 2. Preparation instructions and recommendations.
 - 3. Primer requirements and recommendations.
 - 4. Storage and handling requirements and recommendations.
 - 5. Application methods.
- C. Verification Samples: For each finish product specified, two samples, minimum size 6 inches square, representing actual product, color, and sheen.

1.05 MOCK-UP

- A. Finish all surfaces required to be painted in one room.
 - 1. Finish room designated by Engineer.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Engineer.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: The Sherwin Williams Company; 101 Prospect Ave NW, Cleveland, Ohio 44115. 1800-321-8194; www.sherwin-williams.com unless noted otherwise below.
- B. Acceptable Manufacturer: Benjamin Moore & Company; 101 Paragon Drive, Montvale, New Jersey 07645; 1800-826-2623; www.benjaminmoore.com unless noted otherwise below.
- C. Substitutions: See Section 01600 - Product Requirements.
 - 1. When submitting request for substitution, provide complete product data specified above under Submittals, for each substitute product.

2.02 APPLICATIONS/SCOPE

- A. Scope: Use products specified in this section to finish ALL interior and exterior surfaces exposed to view, unless otherwise indicated; DO NOT PAINT THE FOLLOWING:

1. Items specified or provided with factory finish; materials and products having factory-applied primer are not considered factory finished.
 2. Items indicated to receive other finishes.
 3. Items indicated to remain unfinished.
 4. Marble, granite, slate, and other natural stones.
 5. Brick, concrete, cast stone, integrally colored plaster.
 6. Glass.
 7. Stainless steel, anodized aluminum, bronze, tern, and lead.
 8. Equipment nameplates, fire rating labels, and operating parts of equipment.
 9. Acoustical materials.
 10. Concealed pipes, ducts, and conduits.
- B. Exterior Surfaces To Be Painted:
1. Concrete curbs, walks, floors, steps, and under canopy.
 2. Metal, bare, primed, and galvanized - corrosion-resistant finish including bollards
 3. Pipes, ducts, conduits, hangers and supports, equipment, and equipment enclosures exposed to weather or view - corrosion-resistant finish.
- C. Interior Surfaces To Be Painted:
1. Walls, ceilings, soffits, bulkheads, and columns of gypsum board, and concrete masonry.
 2. Concrete floors scheduled to be sealed.
 3. Metal, bare, primed, and galvanized including structure and deck in basement
 4. Wood trim and frames transparent finish.
 5. Wood doors - transparent finish.
 6. Wood cabinets and shelving - transparent finish.
 7. Wood trim - transparent finish.
 8. Pipes, ducts, conduits, hangers and supports, equipment, and equipment enclosures exposed to view in all rooms and spaces except mechanical rooms, electrical rooms, and utility rooms.
 9. Access panels and equipment cabinets where exposed to public view.
- D. Colors:
1. Indicated on drawings.
 2. Finish pipes, ducts, and conduit the same color as the wall/ceiling they are mounted on/under.
 3. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

2.03 EXTERIOR PAINT SYSTEMS

- A. All Exterior Surfaces Indicated to be Painted, Unless Otherwise Specified:
1. Preparation as specified by manufacturer.
 2. One coat of primer recommended by manufacturer.
 3. On concrete surfaces including pad under canopy, walks, curbs, conc. caps, and misc. pads:
 - a. See Section 03390 Concrete Sealer / Hardener
- B. Pavement Traffic Markings:
1. Including pavement.
 2. Do not apply to new asphalt less than 3 months after installation unless approved by manufacturer
 2. 1 coat Martin Senour Acrylic Latex Traffic Zone marking paint (100% Acrylic), VOC-compliant
- C. Exterior Abuse- and Corrosion-Resistant Finish:
1. Including Bollards and exterior lintels. Note colors to be determined by Engineer.
 2. Preparation as specified by manufacturer.
 3. On Other Substrates including metals: 1 coat primer recommended by manufacturer.
 4. Gloss: 2 coats Tech-Gard Maintenance Gloss Enamel (Alkyd/oil).

2.04 INTERIOR PAINT SYSTEMS

- A. All Interior Surfaces To Be Painted, Unless Otherwise Specified:
1. Preparation as specified by manufacturer.
 2. On concrete surfaces including all basement floor and any concrete floor not scheduled for finish including storage areas, receiving, etc.

- a. See Section 03390 Concrete Sealer / Hardener
- 3. On Concrete Masonry including basement walls and all masonry walls on main level scheduled to be painted:
 - a. 1 coat of PPG Block Filler #f3-7
 - b. 2 coats of PPG 6-500 Acrylic Eggshell
- B. Interior Gypsum Wallboard Walls, Soffits, Ceiling and bulkheads scheduled for paint:
 - 1. Preparation as specified by manufacturer.
 - 2. 1st Coat: S-W PrepRite® 200 Latex Primer, B28W200
 - a. (4 mils wet, 1.2 mils dry)
 - 3. 2nd Coat: S-W ProMar® 200 Latex Eggshell, B31W2200 Series
 - 4. 3rd Coat: S-W ProMar® 200 Latex Eggshell, B31W2200 Series
 - a. (4 mils wet, 1.3 mils dry per coat)
- C. Interior Overhead Steel, Galvanized Steel, and Aluminum if exposed Color to be as shown on Drawings:
 - 1. Including deck, panels, joists, structural members, ducts, piping, and louvers.
 - 2. Preparation as specified by manufacturer.
 - 3. One coat of primer recommended by manufacturer.
 - 4. 2 coats of #6-725 PPG Supertech water borne dry-fog
- D. Interior Metal Surfaces Subject to Frequent Contact by Occupants:
 - 1. Including door frames. Note that all metal door frames to be painted sprayed
 - 2. Preparation as specified by manufacturer.
 - 3. 1 coat of primer recommended by manufacturer.
 - 4. Eggshell: 1 coat S-W Interior Oil Eggshell Finish.
- E. Interior Wood - Natural Clear Finish:
 - 1. Including trim and doors.
 - 2. Preparation as specified by manufacturer.
 - 3. Sanding sealer recommended by manufacturer.
 - 4. Satin: 1 coat Acrylic Latex Varnish.
- F. Interior Wood - Stain with Clear Finish:
 - 1. Including trim and doors.
 - 2. Preparation as specified by manufacturer.
 - 3. Open-Grained Wood: Fill and stain simultaneously with filler mixture as specified by manufacturer, using Tonetic Oil Wood Stain.
 - 4. Close-Grained Wood: 1 coat Tonetic Oil Wood Stain.
 - 5. 1 coat Sanding Sealer, and sand.
 - 6. Satin: 1 coat Varmor Clear Urethane Finish.
 - 7. Gloss: 1 coat Varmor Clear Urethane Finish.

2.05 MATERIALS - GENERAL REQUIREMENTS

- A. Paints and Coatings - General:
 - 1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
 - 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 - 3. Supply each coating material in quantity required to complete entire project's work from a single production run.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of coatings until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Seal surfaces that might cause bleed-through or staining of top coat.

3.03 INSTALLATION

- A. Stir coatings before and during application as recommended by manufacturer.
- B. Do not apply to wet or damp surfaces.
 - 1. Wait at least 30 days before applying to new concrete masonry.
 - 2. Test new concrete for moisture content.
 - 3. Wait until wood is fully dry after rain or morning fog or dew.
- C. Apply coatings using methods recommended by manufacturer.
- D. Apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturer's recommended film thickness.
- F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

3.04 PROTECTION

- A. Protect finished coatings until completion of project
- B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION

SECTION 10500 LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Locker units with hinged doors.
- B. Filler panels.

1.02 RELATED SECTIONS

- A. Section 06114 - Wood Blocking and Curbing: Wood base construction.
- B. Section 06114 - Wood Blocking and Curbing: Wood grounds and attachment strips.

1.03 REFERENCES

- A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2005a.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on locker types, sizes and accessories.
- C. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.
- D. Samples: Submit two samples 3 x 6 inches in size, of each color scheduled; applied to specified base metal.
- E. Manufacturer's Installation Instructions: Indicate component installation assembly.

1.05 MOCK-UP

- A. Provide mock-up of one full size locker, single tier with sloped top, in selected colors.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Protect locker finish and adjacent surfaces from damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Lockers:
 - 1. Art Metal Products: www.artmetalproducts.com.
 - 2. Lyon Workspace Products: www.lyonworkspace.com.
 - 3. Penco Products, Inc: www.pencoproducts.com.
 - 4. Republic Storage Systems Co: www.republicstorage.com.
 - 5. American Specialties Inc.
 - 6. Substitutions: See Section 01600 - Product Requirements.

2.02 MATERIALS

- A. Sheet Steel: Cold-rolled mild steel, uncoated, stretcher leveled; to the following minimum thicknesses:
 - 1. Body and Shelf: 24 gage, 0.024 inch.
 - 2. Door Outer Face: 18 gage, 0.048 inch.
 - 3. Door Inner Face: 20 gage, 0.036 inch.
 - 4. Door Frame: 16 gage, 0.060 inch.
 - 5. Hinges: 14 gage, 0.075 inch.
 - 6. Base: 20 gage, 0.036 inch.
 - 7. Sloping Top: 20 gage, 0.036 inch.
 - 8. Trim: 20 gage, 0.036 inch.
- B. Accessories For Each Locker: Two single prong wall hooks, coat hanger bar.

2.03 LOCKER UNITS

- A. Size: As shown on drawings
- B. Configuration: as shown on Drawings

- C. Mounting: Surface mounted.
- D. Base: Metal base.
 - 1. Base Height: 4 inch.
- E. Locking: Equipped with master key cylinder locks.
- F. Ventilation Method: Standard louvers or vertical perforations.
- G. Class: Quiet.
- H. Locker Body: Formed and flanged; with steel stiffener ribs; electric spot welded.
- I. Frames: Formed channel shape, welded and ground flush, welded to body, resilient gaskets and latching for quiet operation.
- J. Doors: Hollow double pan, sandwich construction with acoustic insulation fill, 1-3/16 inch thick; welded construction, channel reinforced top and bottom with intermediate stiffener ribs, grind and finish edges smooth.
- K. Hinges: Two for doors under 42 inches high; three for doors over 42 inches high; weld securely to locker body and door.
- L. Integral Cylinder Lock: Master keyed; provide two keys per lock and four master keys.
- M. Number Plates: Provide oval shaped brass plates. Form numbers 1 inch high of block font style with ADA designation, in contrasting color.
- N. Finish edges smooth without burrs.
- O. Fabricate ends and closure pieces.
- P. Provide perforated end panels and filler strips.

2.04 FINISHING

- A. Clean, degrease, and neutralize metal; prime and finish with one coat of baked enamel.
- B. Paint locker bodies and doors in contrasting colors.
- C. Paint locker units 1 color, as selected.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared bases are in correct position and configuration.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install lockers plumb and square.
- C. Place and secure on prepared base.
- D. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 lb.
- E. Bolt adjoining locker units together to provide rigid installation.
- F. Install end panels, filler panels
- G. Install accessories.
- H. Replace components that do not operate smoothly.

3.03 CLEANING

- A. Clean locker interiors and exterior surfaces.

END OF SECTION

SECTION 10523 - FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.

1.02 RELATED SECTIONS

- A. Section 06114 - Wood Blocking and Curbing: Wood blocking and shims.
- B. Section 09900 - Paints and Coatings: Field paint finish.

1.03 REFERENCES

- A. NFPA 10 - Standard for Portable Fire Extinguishers; National Fire Protection Association; 2007.
- B. UL (FPED) - Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.04 PERFORMANCE REQUIREMENTS

- A. Conform to NFPA 10.
- B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

1.05 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate cabinet physical dimensions.
- C. Product Data: Provide extinguisher operational features.
- D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers, Cabinets and Accessories:
 - 1. JL Industries, Inc: www.jlindustries.com.
 - 2. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 3. Potter-Roemer: www.potterroemer.com.
 - 4. Substitutions: See Section 01600 - Product Requirements.

2.02 FIRE EXTINGUISHERS

- A. Dry Chemical Type: Stainless steel tank, with pressure gage.
 - 1. Class ABC.
 - 2. Size 10.
 - 3. Size and classification as scheduled.

2.03 FIRE EXTINGUISHER CABINETS

- A. Metal: Formed primed steel sheet; 0.036 inch thick base metal.
- B. Cabinet Configuration: Recessed type.
 - 1. Sized to accommodate accessories.
- C. Door: 0.036 inch thick, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with two butt hinge. Provide nylon catch.
- D. Door Glazing: Plastic, clear, 1/8 inch thick acrylic. Set in resilient channel gasket glazing.
- E. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.
- F. Weld, fill, and grind components smooth.
- G. Finish of Cabinet Exterior Trim and Door: Satin chrome.

H. Finish of Cabinet Interior: White enamel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Place extinguishers and accessories in cabinets.

END OF SECTION

SECTION 10800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Accessories for toilet rooms, showers. Coordinate blocking
- B. Grab bars.

1.02 RELATED SECTIONS

- A. Section 10160 - Metal Toilet Compartments.

1.03 REFERENCES

- A. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- B. ASTM A 269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2004.
- C. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2005a.
- D. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar, 2003.
- E. ASTM C 1036 - Standard Specification for Flat Glass; 2001 .
- F. GSA CID A-A-3002 - Mirrors, Glass; U.S. General Services Administration; 1996.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.

1.05 COORDINATION

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Toilet Accessories:
 - 1. Bobrick: www.bobrick.com
 - 2. Bradley Corporation: www.bradleycorp.com.
 - 3. Substitutions: Section 01600 - Product Requirements.
- B. All items of each type to be made by the same manufacturer.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Stainless Steel Sheet: ASTM A 666, Type 304.
- C. Stainless Steel Tubing: ASTM A 269, Type 304 or 316.
- D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A 653/A 653M, with G90/Z275 coating.
- E. Mirror Glass: Float glass, ASTM C 1036 Type I, Class 1, Quality Q2, with silvering, copper coating, and suitable protective organic coating to copper backing in accordance with GSA CID A-A-3002.
- F. Adhesive: Two component epoxy type, waterproof.
- G. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof, security type.
- H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

- A. Stainless Steel: NO. 4 satin brushed finish, unless otherwise noted.
- B. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.
- C. Galvanizing for Items Other than Sheet: Comply with ASTM A 123/A 123M; galvanize ferrous metal and fastening devices.
- D. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.
- E. Back paint components where contact is made with building finishes to prevent electrolysis.

2.04 TOILET ROOM ACCESSORIES

- A. Toilet Paper Dispenser: Double roll, surface mounted bracket type, chrome-plated zinc alloy brackets, spindleless type for tension spring delivery designed to prevent theft of tissue roll.
- B. Paper Towel Dispenser: Folded paper type, stainless steel, semi-recessed, with viewing slots on sides as refill indicator and tumbler lock.
- C. Capacity: 300 C-fold minimum.
- D. Soap Dispenser: Liquid soap and gel dispenser, wall-mounted, surface, for with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator, tumbler lock.
 - 1. Size: As indicated on drawings
- E. Mirrors: Stainless steel framed, 6 mm thick float glass mirror.
 - 1. Size: As indicated on drawings.
 - 2. Frame: 0.05 inch angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; No.4 finish.
 - 3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and non absorptive filler material.
 - 4. Fixed Tilt Mirrors: Minimum 3 inches tilt from top to bottom.
- F. Grab Bars: Stainless steel, 1-1/4 inches outside diameter, minimum 0.05 inch wall thickness, smooth surface finish, concealed flange mounting; 1-1/2 inches clearance between wall and inside of grab bar.
 - 1. Length and configuration: As indicated on drawings

2.06 UTILITY ROOM ACCESSORIES

- A. Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, hat-shaped channel.
 - 1. Holders: 3 spring-loaded rubber cam holders.
 - 2. Length: 36 inches.
 - 3. Length: Manufacturer's standard length for number of holders.
 - 4. Location: All Janitors' closets.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Verify that field measurements are as indicated on drawings.

3.02 PREPARATION

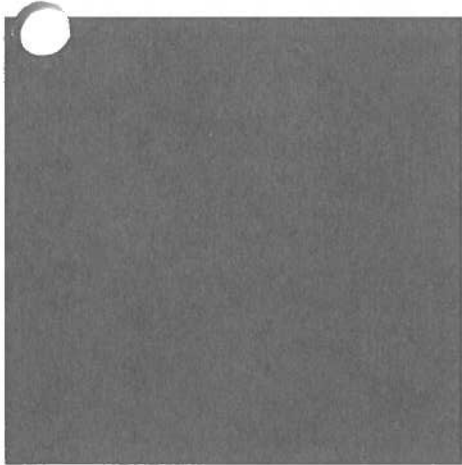
- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights and Locations: As required by accessibility regulations, as indicated on drawings, and as follows:

END OF SECTION

Appendix A



ECS Midwest LLC

Geotechnical Engineering Report

Office Building in Jefferson (OH)

152 East Erie Street
Jefferson, Ashtabula County, Ohio

ECS Project Number 67:4411

April 6, 2026





ECS MIDWEST, LLC

Geotechnical • Construction Materials • Environmental • Facilities

"One Firm. One Mission."

April 6, 2026April 6, 2026

Mr. Dennis Bowman
F & B Engineering, Inc
9671 Oxford Glen Drive
Mentor, Ohio 44060

ECS Project No. 67:4411

Reference: Geotechnical Engineering Report
Office Building in Jefferson (OH)
152 East Erie Street, Jefferson, Ashtabula County, OH

Dear Mr. Bowman:

ECS Midwest, LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed to scope of work. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our site preparation recommendations.

It has been our pleasure to be of service to F & B Engineering, Inc. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS MIDWEST, LLC

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Geotechnical Project Manager II

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APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Boring Location Diagram(s)
- Subsurface Cross-Section(s)

Appendix B – Field Operations

- Reference Notes
- Exploration Procedures
- Boring Logs

Appendix C – Laboratory Testing

- Laboratory Testing Summary
- Grain Size Analysis/Analyses
- Plasticity Chart(s)

EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the future development. Further, our foundation recommendations are summarized. Information gleaned from the Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

- The exploration included seven (7) soil borings. Within each soil boring explored 1 to 4 inches of topsoil was observed at the surface. Fill/Possible fill materials were encountered at test boring locations B-03, B-04 and B-07 which extended to the depths of approximately 1 to 2 feet below surface grades. The underlying natural (CL) Lean Clay, (CL) Lean Clay with Sand, (CL) Lean Clay with Gravel, (CL) Sandy Lean Clay with Gravel, trace soils extended the depths of approximately 6 and 13½ feet below surface grades. Bedrock consisting of highly weathered shale was encountered below the natural soils and extended to terminal depths of each boring location. Groundwater was not encountered at any test boring locations during field drilling operations and upon completion of fieldwork.
- It is anticipated complete removal of unsuitable fill below building footprint, and a minimum of 12 inches below the pavement subgrade elevations will be required.
- Based on this exploration, and depending on the final grades, the potential development may be supported on conventional shallow foundations consisting of column or strip footing bearing on the lean clay (Stratum II) or compacted Engineered Fill. The spread footings should be proportioned for a **maximum net allowable bearing pressure of 2,500 pounds per square foot.**
- The potential building floor slab thicknesses may be determined based on the recommended value of modulus of subgrade reaction of 100, pounds per cubic inch (pci), depending upon the subgrade preparation.
- **Seismic Site Class:** Based on the results of the drilling and Standard Penetration Testing (SPT) performed at the project site, the Seismic Site Class is determined to be "C".

Refer to the text of the report for site specific design and construction recommendations

1.0 INTRODUCTION

The purpose of this study was to provide geotechnical information for the design of the proposed New Office Building Development in the city of Jefferson, Ohio. The recommendations developed for this report are based on site investigation and project information supplied by Mr. Dennis Bowman of F & B Engineering, Inc.

Our services were provided in accordance with Proposal No. 67:6068-GP, dated February 20, 2026. This scope of services was authorized on February 23, 2026.

This report contains the procedures and results of our subsurface exploration and laboratory testing programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

The report includes the following items.

- A brief review and description of our field and laboratory test procedures and the results of testing conducted.
- A review of surface topographical features and site conditions.
- A review of area and site geologic conditions.
- A review of subsurface soil stratigraphy with pertinent physical properties.
- Final soil exploration test boring logs.
- Recommendations for site preparation and construction of compacted fills.
- Evaluation and recommendations relative to groundwater control.
- Foundation recommendations for proposed construction.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION/CURRENT SITE USE/PAST SITE USE

The project site is located at 152 East Erie Street in Jefferson, Ashtabula County, Ohio. The proposed development site is bounded by parcel 26-022-00-144-00 to the west, parcel 26-022-00-140-00 to the east and parcel 26-022-00-143-01 to the south. The site encompasses approximately 1.5 acres and consists of parcel No. 26-022-00-143-00. The site was formerly developed with a building and associated pavement areas; however, these improvements were demolished before 2014.

Based on a review of available Google Earth topographic data, the ground surface generally slopes downward from the south toward the north, with an approximate total elevation change of about 6 feet (from approximately 953 feet MSL to 947 feet MSL). The site area is shown below:



Site Location Map

2.2 PROPOSED CONSTRUCTION

Based on the information provided, the proposed construction consists of a single-story, slab-on-grade, office building measuring approximately 5,000 square feet with attached storage building measuring approximately 1,800 square feet in plan area. It is understood that The proposed structural loads will consist of maximum wall loads of 2.5 kips per linear foot and floor slab loads of approximately 100 psf. The pavement area consists of two small parking lots located north and south of the building with total of 35 parking spaces. The pavement area also includes a drive-thru lane and access to Erie Street. The proposed finished site grading and the planned bottom-of-footing elevation(s) have not been provided at this time.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our exploration procedures are explained in greater detail in Appendix B including the insert titled Subsurface Exploration Procedures. Our scope of work included drilling seven (7) soil borings. Our borings were located with a handheld GPS unit and their approximate locations are shown on the Boring Location Diagram in Appendix A.

3.1 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil. Please refer to the boring logs in Appendix B.

GENERALIZED SUBSURFACE CHARACTERISTICS					
Approximate Depth (feet)	Stratum No.	Material Description	Ranges of Moisture Contents	Ranges of Qp Values (tsf)	Ranges of SPT ⁽¹⁾ N-values (bpf)
0 to ¼ (Surface cover)	N/A	Topsoil: 1 to 4 inches	N/A	N/A	N/A
1 to 2	I	POSSIBLE FILL/FILL, (SP) Poorly Graded Sand with Gravel, (CL-ML) Silty Clay, , trace gravel, contains asphalt, organics, roots, wood, brown, moist, loose and very stiff (Encountered only in B-03, B-04 and B-07)	6.2 to 39.8	N/A	8 to 15
6 to 13½	II	(CL) Lean Clay, (CL) Lean Clay with Sand, (CL) Lean Clay with Gravel, (CL) Sandy Lean Clay with Gravel, trace gravel, brown to gray, moist, firm to hard and medium dense	7.6 to 26.8	1 to 4	4 to 54
10 to 15¼ (EOB)	II	Shale, Highly Weathered, Soft to Moderately Hard, Gray	N/A	N/A	29 to 50/2"

Notes:

(1) Standard Penetration Testing.

A graphical presentation of the subsurface conditions is shown on the Subsurface Cross-Section Diagram included in Appendix A. The soil stratification shown on the boring logs represents the interpreted soil conditions at the actual boring locations. Variations in the stratification can occur between sample intervals and boring locations. The subsurface conditions at other times and locations at the project site may differ from those found at the boring locations. If different site conditions are encountered during construction, ECS should be contacted to review our recommendations relative to the new information.

3.2 GROUNDWATER OBSERVATIONS

Groundwater was not encountered at any of the test boring locations during field drilling operations or upon completion of fieldwork. It should be noted that the boreholes were not left open for a period to observe signs of seepage. Groundwater results were recorded on the boring logs found in Appendix B.

Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors. Water may be encountered during construction at different elevations or locations although no water was noted during the short time of the drilling operation.

3.3 LABORATORY TESTING

The laboratory testing consisted of selected tests performed on samples obtained during our field exploration operations. Classification and index property tests were performed on representative soil samples in accordance with applicable ASTM standards. These tests included:

- Natural Moisture Content
- Particle Size Analysis
- Atterberg Limits

Each sample was visually classified on the basis of texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols. After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in-situ, the transitions may be gradual.

4.0 DESIGN RECOMMENDATIONS

4.1 FOUNDATIONS

Provided subgrades and Engineered Fills are prepared as recommended in this report, the proposed future development can be supported by shallow foundations including column footings and continuous wall footings. We recommend the foundation design use the following parameters:

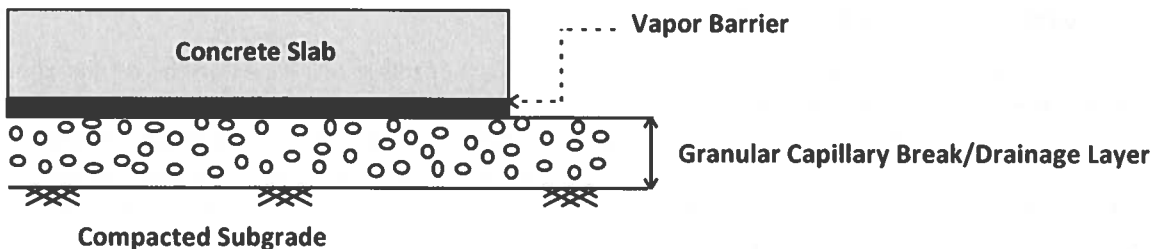
FOUNDATION DESIGN RECOMMENDATIONS		
Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure ⁽¹⁾	2,500 psf	2,500 psf
Acceptable Bearing Soil Material	(CL) LEAN CLAY (Stratum II) or Engineered Fill overlying Stratum II	
Competent Soils Designated Suitable for the Allowable Bearing Pressure	$N \geq 10$ bpf or $Q_p \geq 1.2$ tsf	
Minimum Width	24 inches	16 inches
Minimum Footing Embedment Depth (Below slab or finished grade) ⁽²⁾	24 inches	18 inches
Minimum Exterior Frost Depth (Below final exterior grade)	42 inches	42 inches
Estimated Total Settlement ⁽³⁾	Less than 1 inch	Less than 1 inch
Estimated Differential Settlement ⁽⁴⁾	Less than $\frac{3}{4}$ inch between columns	Less than $\frac{3}{4}$ inch

Notes:

- (1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
- (2) For bearing considerations, frost penetration requirements.
- (3) Based on assumed structural loads. If Final loads are different, ECS must be contacted to update foundation recommendations and settlement calculations.
- (4) Based on assumed structural loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

4.2 SLABS ON GRADE

No grading information was available at the time of this report submittal. However, it is anticipated that general site grading may be required to establish final grades. Based on the anticipated subgrade soils and floor loading, the following graphic depicts our general soil-supported slab recommendations:



1. **Drainage Layer Thickness:** Minimum 6 inches thick
2. **Drainage Layer Material:** 6 inches of GRAVEL (GP, GW) having a maximum aggregate size of 1 inch and no more

than 5 percent passing the No. 200 sieve.

3. **Compacted Subgrade:** Compacted to at least 98 percent of the maximum dry density per ASTM D698.

A thicker slab may be needed depending on the actual floor loads. The structural engineer should determine the actual slab thickness and other requirements such as steel reinforcement. Provide adequate construction joints, contraction joints and isolation joints in the slab to reduce the impacts of cracking and shrinkage. Refer to the ACI 302.1R04 *Guide for Concrete Floor and Slab Construction* for additional information regarding concrete slab joint design. Reinforce the slab with welded wire fabric or include an appropriate fiber mesh admixture to help control shrinkage cracking.

Subgrade Modulus: Provided the slab subgrade and Granular Drainage Layer are constructed in accordance with our recommendations, the slab may be designed assuming a modulus of subgrade reaction, k_1 of 100 pci (lbs./cu. inch). The modulus of subgrade reaction value is based on a 1 ft by 1 ft plate load test basis.

4.3 SEISMIC DESIGN CONSIDERATIONS

Seismic Site Classification: The Ohio Building Code (OBC) 2017 requires site classification for seismic design based on the upper 100 feet of a soil profile. At least two methods are utilized in classifying sites, namely the shear wave velocity (v_s) method and the Standard Penetration Resistance (N-value) method. The Standard Penetration Method was used in classifying this site.

SEISMIC SITE CLASSIFICATION				
Site Class	Soil Profile Name	Shear Wave Velocity, V_s , (ft./s)	N value (bpf)	Su value (psf)
A	Hard Rock	$V_s > 5,000$ fps	N/A	N/A
B	Rock	$2,500 < V_s \leq 5,000$ fps	N/A	N/A
C	Very dense soil and soft rock	$1,200 < V_s \leq 2,500$ fps	>50	$\geq 2,000$
D	Stiff Soil Profile	$600 \leq V_s \leq 1,200$ fps	15 to 60	1,000 to 2,000
E	Soft Soil Profile	$V_s < 600$ fps	<15	$\leq 1,000$

Based upon our interpretation of the subsurface conditions, the appropriate Seismic Site Classification is "C" as shown in the preceding Table.

The Site Class definition should not be confused with the Seismic Design Category designation which the Structural Engineer typically assesses. If a higher site classification is beneficial to the project, we can provide additional testing methods that may yield more favorable results.

4.4 PAVEMENT DESIGN CONSIDERATIONS

California Bearing Ratio (CBR) testing was not performed as part of this study. Based on the results of our laboratory testing, we recommend that a **CBR value of 4** for flexible pavements or a modulus of subgrade reaction, **k of 100 pounds per cubic inch (pci)** for rigid pavements be used as preliminary anticipated subgrade reaction values. The pavement design recommendations assume the subgrade consists of suitable materials evaluated by ECS, and the subgrade is prepared as recommended in the Subgrade Preparation and Earthwork Operations sections of this report.

The site plan we reviewed did not indicate where different pavement types might be proposed. Nor was traffic information provided to ECS at the time of this report. Typically, standard-duty pavement is used for automobile parking areas whereas heavy-duty pavement is used for internal drives. We anticipate that there will be concrete aprons at all entrance and exit points. We estimate that over 20 years, the standard-duty pavement will be subjected to 20,000 ESALs and the heavy-duty pavement will be subjected to 100,000 ESALs.

The proposed pavement sections in this report are preliminary in nature to act as guidelines that may or may not comply with local jurisdictional minimums. The Civil Engineer should design the pavement sections based on their determined traffic information.

MINIMUM PAVEMENT SECTION RECOMMENDATIONS				
Pavement Material	Compacted Material Thicknesses (Inches)			
	Flexible Pavement		Rigid Pavement	
	(Standard-Duty)	(Heavy-Duty)	(Standard-Duty)	(Heavy-Duty)
Portland Cement Concrete ($f'_c = 4,000$ psi)	--	--	5	6
Asphalt Concrete Surface Course (ODOT Item 441, Type 1)	1½	1½	--	--
Asphalt Concrete Intermediate Course (ODOT Item 441, Type 1 or 2)	2	2½	--	--
ODOT Item 304 Aggregate Base	6	8	4	6
Total Pavement Section Thickness	9½	12	9	12

The pavement sections in the Table above do not provide an allowance for construction traffic. If pavements will be constructed early during site development to accommodate construction traffic, consideration should be given to the construction of designated haul roads, where thickened pavement sections can be provided to accommodate the construction traffic, as well as the future in-service traffic. ECS can provide additional design assistance with pavement sections for haul roads if requested.

We recommend the crushed granular base course be compacted to at least 98 percent of the maximum dry density obtained in accordance with ASTM D698, Standard Proctor Method. The hot mix asphalt should be compacted to between 92 and 97 percent of the maximum theoretical density value.

Rigid Concrete Pavements: Concrete pavement at least 8 inches thick is recommended in frequent traffic areas such as where trucks frequently turn, delivery areas, trash enclosure pads, and points of ingress or egress due to the high wheel and impact loads that these areas receive. The concrete pavement section should consist of air-entrained Portland cement concrete having a minimum 28-day compressive strength of 4,000 psi. The rigid pavement section should be provided with construction joints at appropriate intervals per PCA requirements. The construction joints should be reinforced with dowels to transfer loads across the joints.

Pavement Drainage: An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration

of the pavement can be expected. Based on our estimated groundwater level, we consider surface water infiltration would be the main source of water to be considered for pavement design on this project.

Shape or crown the final pavement surface to properly direct surface water to suitable on or off-site storm water drainage infrastructure. Properly slope the clay pavement subgrade to avoid dips or pockets where water may become trapped. Dips in the silty clay subgrade could result in a "bathtub" effect, which may trap water and potentially soften the subgrade. The subgrade in areas requiring undercut and backfill with granular soils are recommended to be graded to drain toward a drain tile. The drain tile should be sloped a minimum of $\frac{1}{2}$ to 1 percent to discharge to nearby storm sewers, drainage ditches or other appropriate drainage facilities. Install edge drains where site grades slope toward the pavement edge to reduce the potential for water to enter the base course layer. Slope edge drains to the nearest appropriate drainage facility. Water that accumulates and ponds on the subgrade surface can lead to deterioration of the subgrade soils, reduction of the base course support characteristics and pavement heave. Good drainage should help reduce the possibility of the subgrade materials being wet over a long period of time.

To reduce the potential for shallow perched water to develop in areas of the site, install "stub" or "finger" drains around catch basins and in other low-lying areas of the parking lot to reduce the accumulation of water above and within the subgrade soils and aggregate base. As an alternative to the use of stub or finger drains, perforate existing manholes and storm sewer inlets with 1-inch diameter holes at 2-foot centers and wrap the manhole/inlet with a non-woven geotextile to reduce migration of material into the manhole/inlet. The holes could be placed at 90-degree intervals around the perimeter of the manhole, and the excavation around the manhole backfilled with free draining granular materials.

Pavement Maintenance Considerations: A sound maintenance program should be implemented to help maintain and enhance the performance of pavements and help attain design service life. A preventative maintenance program should be started early in the pavement life to be effective. The research-supported industry standard indicates that preventative maintenance should typically begin within 2 to 5 years of the placement of pavement. Failure to perform preventative maintenance will reduce the service life of the pavement and increase the costs for corrective maintenance and full pavement rehabilitation. Seal joints and cracks with elastomeric caulk in a timely manner to help reduce water infiltration through the pavement section into the base course layer, which may result in softening of the subgrade and deterioration of the pavement. Observe pavements for distresses, such as cracks, depressions, and poor drainage, at least twice a year, typically once in the Spring and once in the Fall.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping all vegetation, topsoil, and any soft or unsuitable materials from the 10-foot expanded building and 5-foot expanded pavement limits. Borings performed in all areas of the site contained an observed 1 to 4 inches of topsoil. Fill/Possible fill materials were also observed at test boring locations B-03, B-04 and B-07 at 1 to 2 feet below surface grades. ECS should be called on to verify that unsuitable surface materials have been completely removed prior to the placement of Engineered Fill. Deeper organic laden soils may be present in wet, low-lying, and poorly drained areas. ECS should be retained to verify that unsuitable surficial materials have been removed prior to the placement of Engineered Fill or construction of structures. Based on this exploration, size of proposed building and anticipated fill depths, we anticipate complete removal of unsuitable material below the building footprint and at least 12 inches below the pavement subgrade elevations.

5.1.2 Proofrolling

Prior to fill placement or other construction on subgrades, the subgrades should be evaluated by an ECS field technician. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 10 tons [e.g., fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of an ECS technician. This procedure is intended to assist in identifying any localized yielding materials.

Where proof rolling identifies areas that are unstable or “pumping” subgrade those areas should be repaired prior to the placement of any subsequent Engineered Fill or other construction materials. Methods of stabilization include undercutting, moisture conditioning, or chemical stabilization. The situation should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed unstable materials, and to assist in the evaluation of appropriate remedial actions to stabilize the subgrade.

5.1.3 Site Temporary Dewatering

The contractor shall make their own assessment of temporary dewatering needs based upon the limited subsurface groundwater information presented in this report. Soil sampling is not continuous, and thus soil and groundwater conditions may vary between sampling intervals (typically 5 feet). If the contractor believes additional subsurface information is needed to assess dewatering needs, they should obtain such information at their own expense. ECS makes no warranties or guarantees regarding the adequacy of the provided information to determine dewatering requirements; such recommendations are beyond our scope of services.

Dewatering systems are a critical component of many construction projects. Dewatering systems must be selected, designed, and maintained by a qualified and experienced (specialty or other) contractor familiar with the geotechnical and other aspects of the project. The failure to properly design and maintain a dewatering system for a given project can result in delayed construction, unnecessary foundation

subgrade undercuts, detrimental phenomena such as 'running sand' conditions, internal erosion (i.e., 'piping'), the migration of 'fines' down-gradient towards the dewatering system, localized settlement of nearby infrastructure, foundations, slabs-on-grade and pavements, etc. Water discharged from any site dewatering system shall be discharged in accordance with all local, state and federal requirements.

6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by F & B Engineering, Inc. If any of this information is inaccurate or changes, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction.

We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

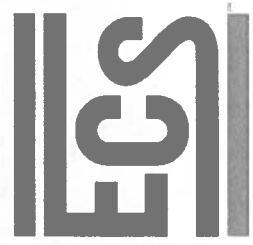
ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

Appendix A - Drawings and Reports

Site Location Diagram

Boring Location Diagram(s)

Subsurface Cross-Section(s)

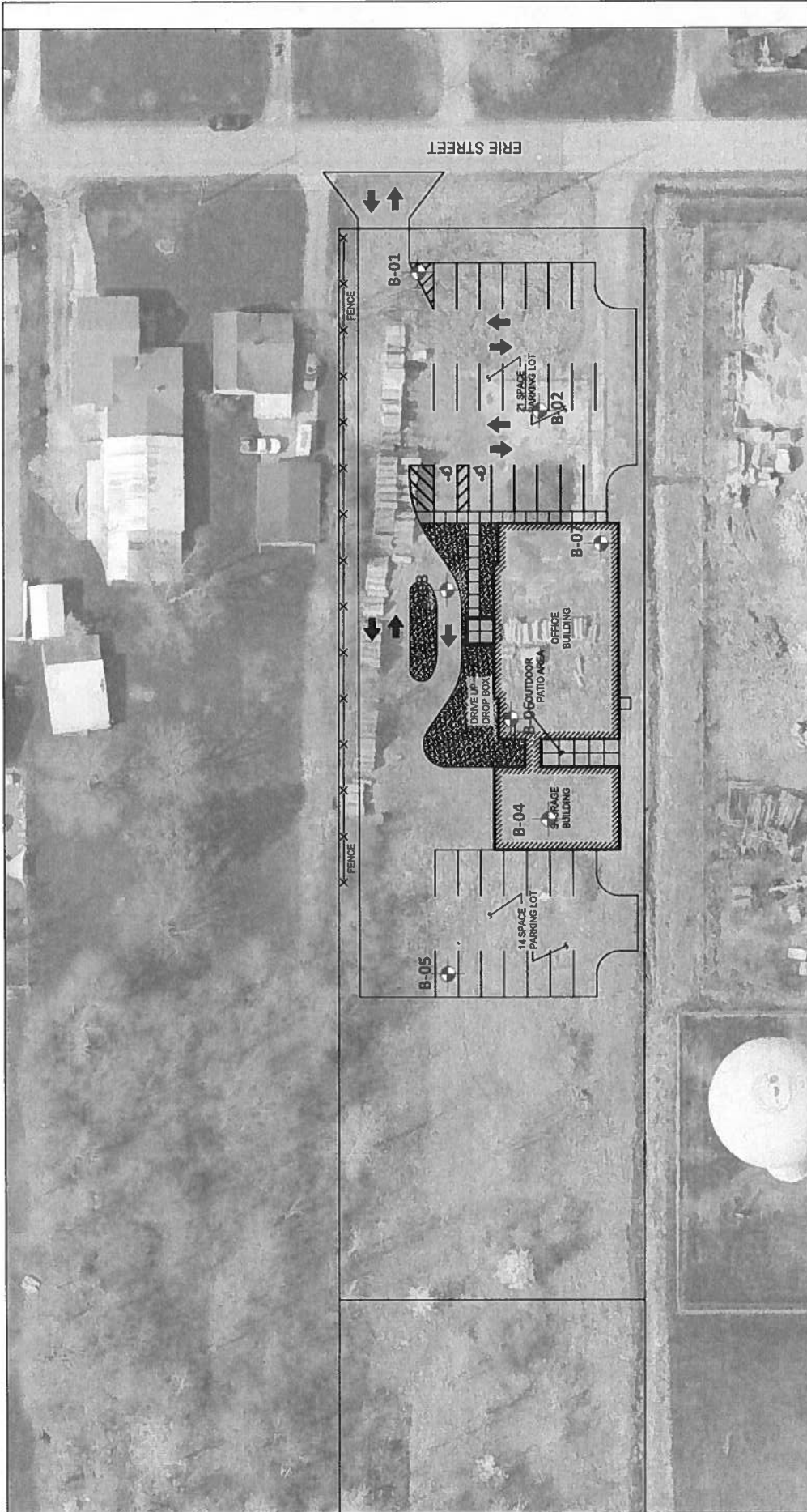


SITE LOCATION DIAGRAM

Office Building in Jefferson (OH)

152 East Erie Street, Jefferson, Ohio
F & B Engineering, Inc

ENGINEER	ST4
SCALE	1" = 500'
PROJECT NO.	67-4411
SHEET	
DATE	3/31/2026



SITE PLAN LAYOUT

SCALE: 1" = 20'-0"



CLIENT:	F & B Engineering, Inc	PROJECT:	Office Building in Jefferson (OH)
DRAWN DATE:	Apr 03, 2026	PROJECT NO.:	67:4411
CHECKED DATE:	Apr 03, 2026	SCALE:	AS SHOWN

Notes

- 1-EOB END OF BORING OR AUGER REFUSAL SR SAMPLER REFUSAL
- 2-SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
- 3-STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586)
- 4- TOPOGRAPHIC INFORMATION IS BASED ON PUBLICLY AVAILABLE DATA (GOOGLE OR Cesium). THE TOPOGRAPHIC LINE SHOWN BETWEEN BORINGS IS FOR VISUAL REFERENCE ONLY PLEASE REFER TO THE REFERENCE NOTES FOR BORING LOGS FOR SYMBOLLOGY MEANING AND A WARNING!

Plastic Limit	Water Content	Liquid Limit		WL (First Encountered)		Fill
X	●	△				
[FINES CONTENT %]				WL (Completion)		Possible Fill
BOTTOM OF CASING				WL (Estimated Seasonal High Water)		Probable Fill
LOSS OF CIRCULATION						
CALIBRATED PENETROMETER				WL (Stabilized)		WR/Rock

ECS

Appendix B - Field Operations

Reference Notes

Exploration Procedures

Boring Logs

REFERENCE NOTES FOR BORING LOGS

MATERIAL^{1,2}

	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	VOID
	BRICK
	AGGREGATE BASE COURSE
	GW WELL-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GP POORLY-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GM SILTY GRAVEL gravel-sand-silt mixtures
	GC CLAYEY GRAVEL gravel-sand-clay mixtures
	SW WELL-GRADED SAND gravelly sand, little or no fines
	SP POORLY-GRADED SAND gravelly sand, little or no fines
	SM SILTY SAND sand-silt mixtures
	SC CLAYEY SAND sand-clay mixtures
	ML SILT non-plastic to medium plasticity
	MH ELASTIC SILT high plasticity
	CL LEAN CLAY low to medium plasticity
	CH FAT CLAY high plasticity
	OL ORGANIC SILT or CLAY non-plastic to low plasticity
	OH ORGANIC SILT or CLAY high plasticity
	PT PEAT highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION	PARTICLE SIZES
Boulders	12 inches (300 mm) or larger
Cobbles	3 inches to 12 inches (75 mm to 300 mm)
Gravel: Coarse	¾ inch to 3 inches (19 mm to 75 mm)
Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand: Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")	<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, QP ⁴	SPT ⁵ (BPF)	CONSISTENCY ⁷ (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT ⁷	COARSE GRAINED (%) ⁸	FINE GRAINED (%) ⁸
Trace	<5	<5
With	10 - 20	10 - 25
Adjective (ex: "Silty")	25 - 45	30 - 45

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT ⁵	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS⁶

	WL (First Encountered)
	WL (Completion)
	WL (Seasonal High Water)
	WL (Stabilized)

FILL AND ROCK

FILL	POSSIBLE FILL	PROBABLE FILL	ROCK

¹Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

²To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

³Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

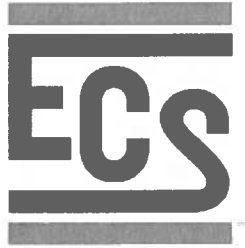
⁴Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

⁵Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

⁶The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

⁷Minor deviation from ASTM D 2488-17 Note 14.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-17.



SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 18-24 inches (in 3 or 4 Increments of 6 inches each)
- Auger is advanced* and an additional SPT is performed
- One SPT typically performed for every two to five feet. An approximate 1.5 inch diameter soil sample is recovered.



**Drilling Methods May Vary—* The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

CLIENT: F & B Engineering, Inc				PROJECT NO.: 67:4411		BORING NO.: B-01		SHEET: 1 OF 1		
PROJECT NAME: Office Building in Jefferson (OH)				DRILLER/CONTRACTOR: Chatfield Drilling Inc						
SITE LOCATION: 152 East Erie Street, Jefferson, Ohio, 44047								LOSS OF CIRCULATION		
LATITUDE: 41.734137		LONGITUDE: -80.761506		STRUCTURE:		SURFACE ELEVATION: 947		BOTTOM OF CASING		

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/RS/MC/SPT-N VALUE)	SPT		Recovery %		RQD %		Fines % F		MC %		
										0	10	20	30	40	50	0	40	60	80	100
5.0	S-1	SS	24	10	Topsoil [Thickness=4"] (CL) LEAN CLAY - trace gravel, brown, moist, soft.			945	1-2-2-2 (4)	4										
	S-2	SS	24	12	(CL) SANDY LEAN CLAY - brown, contains rock fragments, moist, stiff to very stiff.				4-5-5-6 (10)	10										
	S-3	SS	24	14					2-6-10-11 (16)	16										
	S-4	SS	24	14	(CL) LEAN CLAY - brown, contains rock fragments, moist, hard.			940	11-16-18-22 (34)	34										
	S-5	SS	24	16	SHALE, highly weathered, Soft to moderately hard, Gray.				12-14-20-15 (34)	34										
10.0																				
15.0	S-6	SS	9	9					49-50/3" (200)	200										
					AUGER REFUSAL at 15.2 FT															

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▼ WL (First Encountered):	NONE	BORING STARTED:	03/11/2026	CAVE IN DEPTH:	6.3 FT
▼ WL (Completion):	NONE	BORING COMPLETED:	03/11/2026	HAMMER TYPE:	Automatic (ETR: 74.3%)
▼ WL (Seasonal High Water):		EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
▼ WL (Stabilized):		ATV	ZO	Hollow Stem Auger (0'-15.2')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: F & B Engineering, Inc				PROJECT NO.: 67:4411		BORING NO.: B-02		SHEET: 1 OF 1		
PROJECT NAME: Office Building in Jefferson (OH)				DRILLER/CONTRACTOR: Chatfield Drilling Inc						
SITE LOCATION: 152 East Erie Street, Jefferson, Ohio, 44047								LOSS OF CIRCULATION		
LATITUDE: 41.733987		LONGITUDE: -80.761364		STRUCTURE:		SURFACE ELEVATION: 948		BOTTOM OF CASING		

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCPIRS/MC/SPT-N VALUE)*	SPT				Recovery %				RQD %				Fines% F				MC%							
										0	10	20	30	40	50	0	20	40	60	80	100	0	20	40	60	80	100	0	20	40	60	80	100
5.0	S-1	SS	24	8	Concrete [Thickness=2"].		X	945	4-6-5-2 (11)	11																							
	S-2	SS	24	12	(CL) SANDY LEAN CLAY - brown, contains significant rock fragments, moist, firm to stiff.				2-4-6-6 (10)	10																							
	S-3	SS	24	10					2-3-3-3 (6)	6																							
	S-4	SS	24	12	(CL) LEAN CLAY - brown, contains significant rock fragments, moist, very stiff.				4-12-16-28 (28)	28																							
	S-5	SS	24	14	SHALE, highly weathered, Soft, gray.				19-13-16-28 (29)	29																							
					END OF BORING at 10.0 FT																												

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL						
▼ WL (First Encountered):		NONE	BORING STARTED:	03/03/2026	CAVE IN DEPTH:	1 FT
▼ WL (Completion):		NONE	BORING COMPLETED:	03/03/2026	HAMMER TYPE:	Automatic (ETR: 91.6%)
▼ WL (Seasonal High Water):			EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
▼ WL (Stabilized):			ATV	ZO		

GEOTECHNICAL BOREHOLE LOG

CLIENT: F & B Engineering, Inc				PROJECT NO.: 67:4411		BORING NO.: B-03		SHEET: 1 OF 1		
PROJECT NAME: Office Building in Jefferson (OH)				DRILLER/CONTRACTOR: Chatfield Drilling Inc						
SITE LOCATION: 152 East Erie Street, Jefferson, Ohio, 44047								LOSS OF CIRCULATION 		
LATITUDE: 41.733801		LONGITUDE: -80.761508		STRUCTURE:		SURFACE ELEVATION: 948		BOTTOM OF CASING 		

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/RSMC/SPT-N VALUE)*	SPT		QP		Recovery %		RQD %		Fines% F		MC% LL			
										0	10	20	30	40	50	0	1	2	3	4	5	0	20
5.0	S-1	SS	24	7	Topsoil [Thickness=1"]. FILL - (SP) POORLY GRADED SAND WITH GRAVEL - brown, contains asphalt, moist, loose.	[Stratigraphy Diagram]			9-5-3-10 (8)	8													
	S-2	SS	24	13	(CL) SANDY LEAN CLAY - trace gravel, brown, contains slight rock fragments, moist, stiff to very stiff.			945	5-7-8-8 (15)	15													
	S-3	SS	24	10					3-9-12-18 (21)	21													
	S-4	SS	24	8	(CL) LEAN CLAY WITH GRAVEL - brown, contains significant rock fragments, moist, hard.				18-22-32-38 (54)	54													
	S-5	SS	24	12	(CL) SANDY LEAN CLAY - brown/gray, contains significant rock fragments, moist, very stiff.			940	1-8-12-12 (20)	20													
10.0	S-6	SS	8	5				935	25-50/2" (300)														
					SHALE, highly weathered, Moderately hard, gray.																		
					AUGER REFUSAL at 15.0 FT																		

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered): NONE		BORING STARTED: 03/03/2026		CAVE IN DEPTH: 9 FT	
WL (Completion): NONE		BORING COMPLETED: 03/03/2026		HAMMER TYPE: Automatic	
WL (Seasonal High Water):		EQUIPMENT: ATV		LOGGED BY: ZO	
WL (Stabilized):				DRILLING METHOD: Hollow Stem Auger (0'-13.7')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: F & B Engineering, Inc				PROJECT NO.: 67:4411		BORING NO.: B-04		SHEET: 1 OF 1		
PROJECT NAME: Office Building in Jefferson (OH)				DRILLER/CONTRACTOR: Chatfield Drilling Inc						
SITE LOCATION: 152 East Erie Street, Jefferson, Ohio, 44047								LOSS OF CIRCULATION		
LATITUDE: 41.733487		LONGITUDE: -80.76131		STRUCTURE:		SURFACE ELEVATION: 949		BOTTOM OF CASING		

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TOP/RS/MC/SPT-N VALUE)	SPT				Recovery %				RQD %				Fines% F				MC%			
										0	10	20	30	40	50	0	20	40	60	80	100	0	20	40	60	80	100	0	20
	S-1	SS	24	1	Topsoil [Thickness=1"].				7-8-7-9 (15)	15																			
	S-2	SS	24	10	POSSIBLE FILL - (CL-ML) SILTY CLAY - trace gravel and sand, brown, contains slight roots and wood, moist, very stiff.				8-9-11-12 (20)	20																			
5.0	S-3	SS	24	12	(CL) SANDY LEAN CLAY WITH GRAVEL - brown, contains significant rock fragments, moist, stiff to very stiff.				4-7-8-12 (15)	15																			
	S-4	SS	24	12	SHALE, highly weathered, Soft, Gray.				20-29-28-34 (57)	57																			
	S-5	SS	24	12				940	9-21-21-16 (42)	42																			
END OF BORING at 10.0 FT																													

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	NONE	BORING STARTED: 03/11/2026	CAVE IN DEPTH: 4 FT
WL (Completion):	NONE	BORING COMPLETED: 03/11/2026	HAMMER TYPE: Automatic
WL (Seasonal High Water):		EQUIPMENT: ATV	LOGGED BY: ZO
WL (Stabilized):			DRILLING METHOD: Hollow Stem Auger (0'-10')

GEOTECHNICAL BOREHOLE LOG

CLIENT: F & B Engineering, Inc				PROJECT NO.: 67:4411		BORING NO.: B-05		SHEET: 1 OF 1		
PROJECT NAME: Office Building in Jefferson (OH)				DRILLER/CONTRACTOR: Chatfield Drilling Inc						
SITE LOCATION: 152 East Erie Street, Jefferson, Ohio, 44047								LOSS OF CIRCULATION 		
LATITUDE: 41.733266		LONGITUDE: -80.761482		STRUCTURE:		SURFACE ELEVATION: 950		BOTTOM OF CASING 		

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/RS/MC/SPT-N VALUE)*	SPT		QP		Recovery %		RQD %		Fines % F		MC %	
										0	50	0	5	0	100	0	100	0	100	0	100
5.0	S-1	SS	24	8	Topsoil [Thickness=4"]. (CL) SANDY LEAN CLAY - brown, moist, firm.				1-2-4-10 (6)	6		16.9	2								
	S-2	SS	24	10	(CL) SANDY LEAN CLAY WITH GRAVEL - brown, contains significant rock fragments, moist, stiff to very stiff, @6 ft. Gray (Till).				7-9-12-12 (21)	21		17.4									
	S-3	SS	24	16					4-7-8-9 (15)	15		13.9									
	S-4	SS	24	16					15-12-12-11 (24)	24		2.2									
	S-5	SS	24	10	SHALE, highly weathered, Soft to moderately hard, Gray.				24-30-45-49 (75)	75		7.5									
	S-6	SS	8	8					45-50/2" (300)	300		5.1									
10.0																					
					AUGER REFUSAL at 14.8 FT																

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. BUT THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	NONE	BORING STARTED:	03/11/2026	CAVE IN DEPTH:	8.8 FT
WL (Completion):	NONE	BORING COMPLETED:	03/11/2026	HAMMER TYPE:	Automatic
WL (Seasonal High Water):		EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
WL (Stabilized):		ATV	ZO	Hollow Stem Auger (0'-14.9')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: F & B Engineering, Inc				PROJECT NO.: 67:4411		BORING NO.: B-06		SHEET: 1 OF 1			
PROJECT NAME: Office Building in Jefferson (OH)				DRILLER/CONTRACTOR:							
SITE LOCATION: 152 East Erie Street, Jefferson, Ohio, 44047								LOSS OF CIRCULATION			
LATITUDE: 41.733586		LONGITUDE: -80.761401		STRUCTURE:		SURFACE ELEVATION: 947		BOTTOM OF CASING			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/RS/MC/SPT-N VALUE)	SPT				QP				PL				MC				LL			
										Recovery %	RQD %	Fines% F	MC%	PL	MC	LL	PL	MC	LL	PL	MC	LL							
5.0	S-1	SS	24	12	Topsoil [Thickness=3"]. (CL) LEAN CLAY - trace gravel and sand, brown/gray, moist, stiff.			945	8-4-8-12 (12)	18																			
	S-2	SS	24	12			9-8-12-6 (20)		20																				
	S-3	SS	24	4			9-6-8-15 (14)		14																				
					END OF BORING at 6.0 FT																								
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. BUT THE TRANSITION MAY BE GRADUAL																													
▼ WL (First Encountered):					BORING STARTED: 04/03/2026					CAVE IN DEPTH: Not Observed																			
▼ WL (Completion):					BORING COMPLETED: 04/03/2026					HAMMER TYPE: Automatic																			
▼ WL (Seasonal High Water):					EQUIPMENT:					LOGGED BY:					DRILLING METHOD:														
▼ WL (Stabilized):																													
GEOTECHNICAL BOREHOLE LOG																													

CLIENT: F & B Engineering, Inc				PROJECT NO.: 67:4411		BORING NO.: B-07		SHEET: 1 OF 1		
PROJECT NAME: Office Building in Jefferson (OH)				DRILLER/CONTRACTOR:						
SITE LOCATION: 152 East Erie Street, Jefferson, Ohio, 44047								LOSS OF CIRCULATION		
LATITUDE: 41.73376		LONGITUDE: -80.761253		STRUCTURE:		SURFACE ELEVATION: 947		BOTTOM OF CASING		

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/RS/MC/SPT-N VALUE)*	SPT		QP		Recovery %		RQD %		Fines% F		MC%	
										0	50	0	5	0	100	0	100	0	100	0	100
	S-1	SS	24	10	Topsoil [Thickness=4"].				5-12-6-10 (18)	18		14.1	2								
	S-2	SS	24	6	FILL - (CL) SANDY LEAN CLAY - contains slight construction debris, firm.			945	5-8-9-12 (17)	17		13.2									
5.0	S-3	SS	24	12	(CL) LEAN CLAY - trace gravel and sand, brown/gray, moist, stiff.				12-8-7-18 (15)	15		13.6									
					END OF BORING at 6.0 FT																

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. NOTU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered):	BORING STARTED: 04/03/2026	CAVE IN DEPTH: Not Observed
▽ WL (Completion):	BORING COMPLETED: 04/03/2026	HAMMER TYPE: Automatic
▽ WL (Seasonal High Water):	EQUIPMENT:	LOGGED BY: DRILLING METHOD:
▽ WL (Stabilized):	Zalneddin Obeld	

GEOTECHNICAL BOREHOLE LOG

Appendix C - Laboratory Testing

Laboratory Testing Summary

Grain Size Analysis/Analyses

Plasticity Chart(s)

Laboratory Testing Summary

[illegible]

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: Office Building in Jefferson (OH)
Client: F & B Engineering, Inc
Project No.: 67-4411
Date Reported: 3/24/2026

Project: Office Building in Jefferson (OH)
Project No.: 67-4411
Client: F & B Engineering, Inc
Date Reported: 3/24/2026

		
Office / Lab	Address	Office Number / Fax
ECS Midwest LLC - Cleveland	1125 Valley Belt Road Brooklyn Heights, OH 44131	(216)741-7007 (216)741-7011

	Office / Lab	Address	Office Number / Fax

	Office / Lab	Address	Office Number / Fax

	Office / Lab	Address	Office Number / Fax

ECS
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ECS
ECS Midwest LLC - Cleveland
1125 Valley Belt Road
Brooklyn Heights, OH 44131
(216)741-7007
(216)741-7044

1435 Valley Park Road
(216)741-7007

ASNT MEMBER
 Brooklyn Heights, OH 44131
 (216)741-7011

Tested by	Checked by	Approved by	Date Received
JonKocaja	JonKocaja	JonKocaja	

Laboratory Testing Summary

Sample Location	Sample Number	Depth (ft)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve		Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI			<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-02	S-1	0.0-2.0	9.3											
B-02	S-2	2.0-4.0	13.0											
B-02	S-3	4.0-6.0	16.9											
B-02	S-4	6.0-8.0	10.1											
B-02	S-5	8.0-10.0	13.8											
B-03	S-1	0.0-2.0	6.2											
B-03	S-2	2.0-4.0	14.9											
B-03	S-3	4.0-6.0	13.7											
B-03	S-4	6.0-8.0	11.2											
B-03	S-5	8.0-10.0	7.6											

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: Office Building in Jefferson (OH)
Client: F & B Engineering, Inc

Project No.: 67-4411
Date Reported: 3/24/2026



Office / Lab

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Tested by JonKocaja	Checked by JonKocaja	Approved by JonKocaja	Date Received

Laboratory Testing Summary

Sample Location	Sample Number	Depth (ft)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-03	S-6	13.0-13.7	15.9										
B-04	S-1	0.0-2.0	39.8										
B-04	S-2	2.0-4.0	14.4										
B-04	S-3	4.0-6.0	17.1										
B-04	S-4	6.0-8.0	9.3										
B-04	S-5	8.0-10.0	5.5										
B-05	S-1	0.0-2.0	16.9										
B-05	S-2	2.0-4.0	17.4										
B-05	S-3	4.0-6.0	13.9										
B-05	S-4	6.0-8.0	9.2										

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: Office Building in Jefferson (OH)
Client: F & B Engineering, Inc

Project No.: 67:4411
Date Reported: 3/24/2026



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Tested by	Checked by	Approved by	Date Received
JonKocaja	JonKocaja	JonKocaja	

[illegible]

Notes: See test reports for test method. ^ASTM D2216-19. *ASTM D2488. **ASTM D1140-17. #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, QC: Organic Content

Project: Office Building in Jefferson (OH)
Client: F & B Engineering, Inc

Project No.: 67:4411
Date Reported: 3/24/2026



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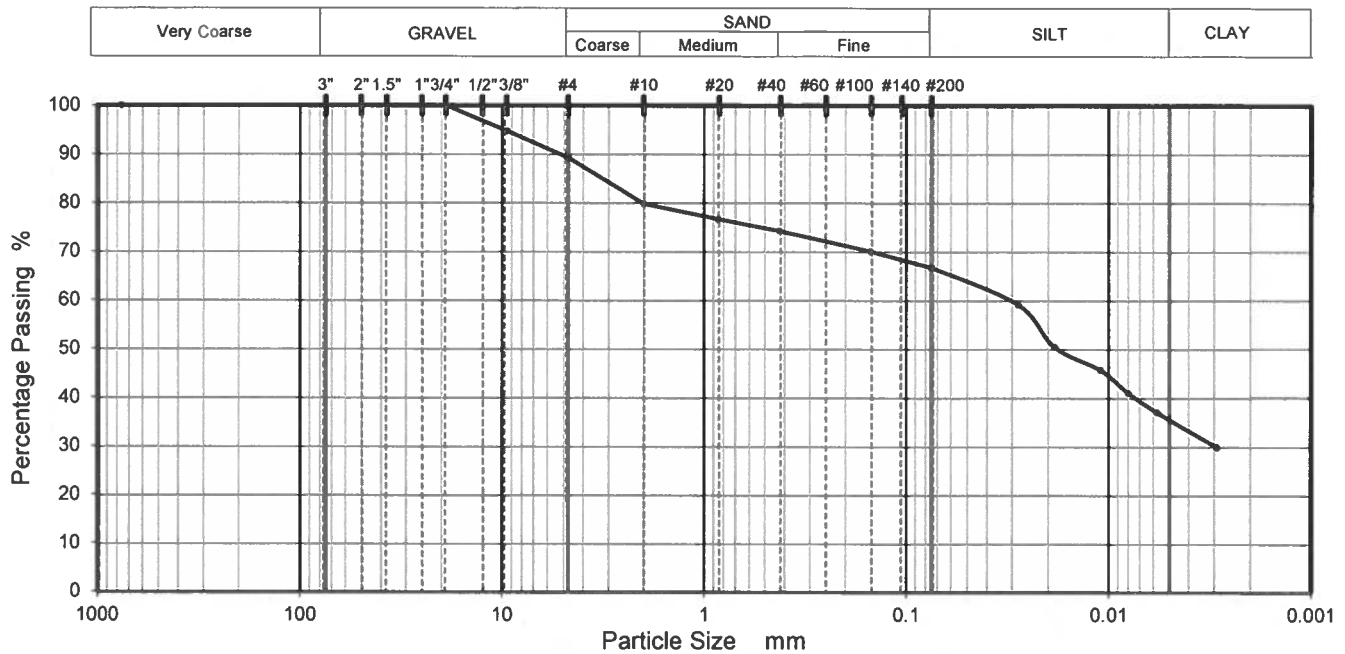
Tested by
JonKocaja

Checked by
JonKocaja

Approved by
JonKocaja

Date Received

PARTICLE SIZE DISTRIBUTION



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0	0.0280	59.2
2"	100.0	0.0186	50.5
1 1/2"	100.0	0.0110	45.8
1"	100.0	0.0080	41.1
3/4"	100.0	0.0057	37.1
3/8"	94.8	0.0029	30.0
#4	89.3		
#10	79.8		
#20	76.7		
#40	74.3		
#100	70.1	Specific Gravity (Historical) 2.70	
#200	66.8		

Dry Mass of sample, g

180.1

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	10.7
Coarse Sand, #4 to #10 sieve	9.5
Medium Sand, #10 to #40	5.5
Fine Sand, #40 to #200	7.5
Silt, 75µm to 5 µm	31.1
Clay < 5µm	35.7

USCS	CL	Liquid Limit	47	D90	5.188	D50	0.018	D10	
AASHTO	A-7-6	Plastic Limit	17	D85	3.211	D30	0.003	Cu	
USCS Group Name	Sandy lean clay	Plasticity Index	30	D60	0.031	D15		Cc	

Project: Office Building in Jefferson (OH)

Client: F & B Engineering, Inc

Sample Description:

Sample Source: B-01

Project No.: 67:4411

Depth (ft): 2.0 - 4.0

Sample No.: S-2

Date Reported: 3/31/2026



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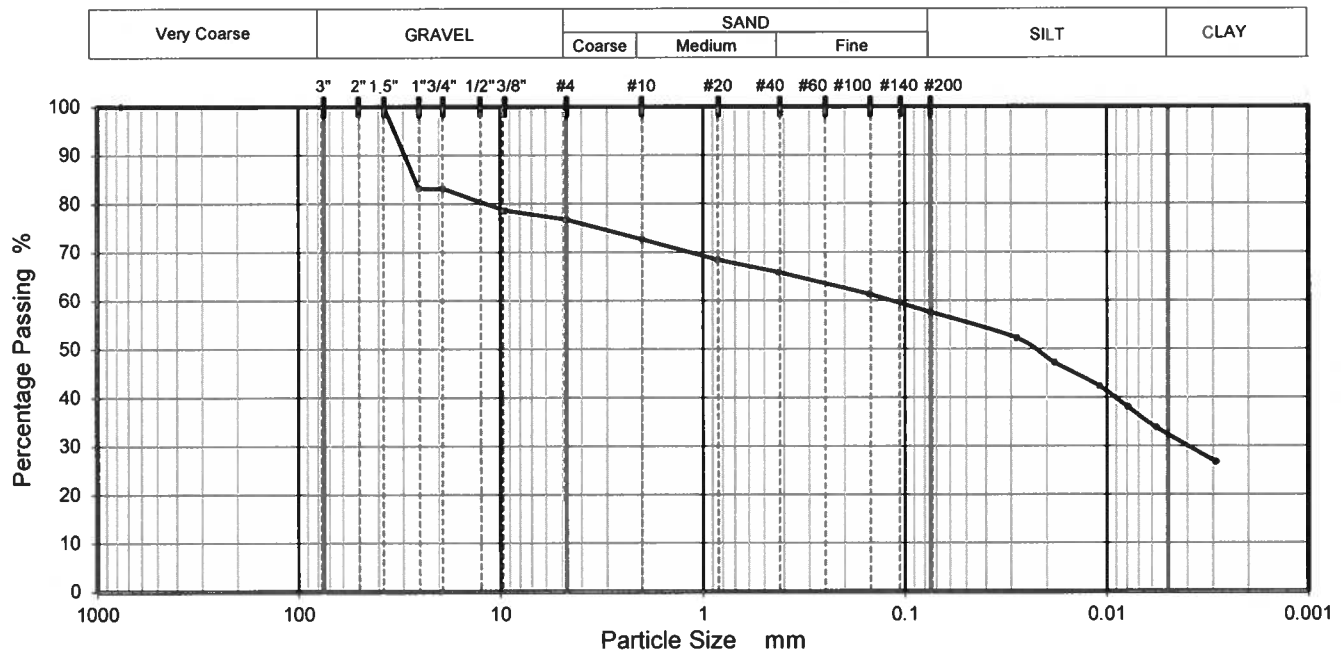
1125 Valley Belt Road
Brooklyn Heights, OH
44131

(216)741-7007

(216)741-7011

Tested by	Checked by	Approved by	Date Received	Remarks
JRodriguez-Vides	JonKocaja	JonKocaja		

PARTICLE SIZE DISTRIBUTION



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0	0.0281	52.2
2"	100.0	0.0184	47.2
1 1/2"	100.0	0.0109	42.3
1"	83.1	0.0079	38.0
3/4"	83.1	0.0057	33.8
3/8"	78.6	0.0029	26.7
#4	76.7		
#10	72.6		
#20	68.4		
#40	65.8		
#100	61.3		
#200	57.6		
		Specific Gravity (Historical) 2.70	

Dry Mass of sample, g

192.0

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	23.3
Coarse Sand, #4 to #10 sieve	4.1
Medium Sand, #10 to #40	6.8
Fine Sand, #40 to #200	8.2
Silt, 75µm to 5 µm	25.2
Clay < 5µm	32.4

USCS	CL	Liquid Limit	35	D90	29.500	D50	0.023	D10	
AASHTO	A-6	Plastic Limit	15	D85	26.170	D30	0.004	Cu	
USCS Group Name	Gravelly lean clay with sand	Plasticity Index	20	D60	0.118	D15		Cc	

Project: Office Building in Jefferson (OH)

Client: F & B Engineering, Inc

Sample Description:

Sample Source: B-03

Project No.: 67:4411

Depth (ft): 4.0 - 6.0

Sample No.: S-3

Date Reported: 3/31/2026



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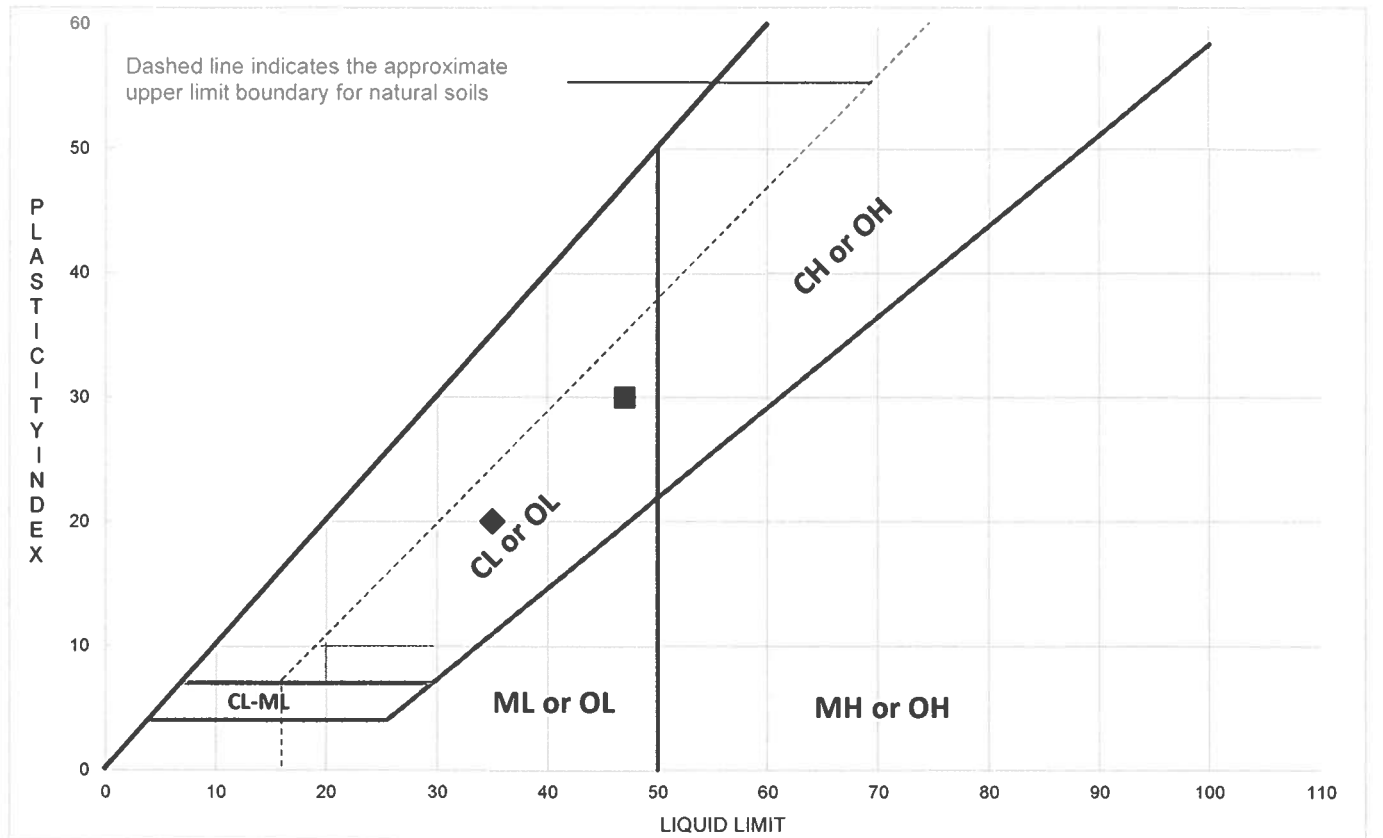
1125 Valley Belt Road
Brooklyn Heights, OH
44131

(216)741-7007

(216)741-7011

Tested by	Checked by	Approved by	Date Received	Remarks
JRodriguez-Vides	JonKocaja	JonKocaja		

LIQUID AND PLASTIC LIMITS TEST REPORT



TEST RESULTS (ASTM D4318-10 (SINGLE POINT TEST))

	Sample Location	Sample Number	Sample Depth (ft)	LL	PL	PI	%<#40	%<#200	AASHTO	USCS	Material Description
■	B-01	S-2	2.00-4.00	47	17	30	74.3	66.8	A-7-6	CL	
◆	B-03	S-3	4.00-6.00	35	15	20	65.8	57.6	A-6	CL	

Project: Office Building in Jefferson (OH)
Client: F & B Engineering, Inc

Project No.: 67:4411
Date Reported: 3/31/2026



Office / Lab
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(216)741-7011

Tested by JRodriguez-Vides	Checked by JonKocaja	Approved by JonKocaja	Date Received



F & B Engineering, Inc.

Governmental Solutions, Plan Review Services, Inspection Services, & Design Services

This addendum must be acknowledged in your bid in order for your bid to be considered for award of this project. It can be acknowledged on the bid form sheet or this cover sheet may be included in your bid. Failure to acknowledge this addendum will result in the rejection of your bid.

Date of Issue: May 6, 2026

Addendum Number: No. 1

Project: Ashtabula County Department of Env. Services Office Building

Bid Opening: May 22, 2026 @ 3:00 p.m.

The following documents are included in this addendum and shall become part of the Bid Documents:

- Civil Construction Documents:
 - Sheet C001 – Site Demolition Plan
 - Sheet C100 – Site Layout Plan
 - Sheet C101 – Site Grading Plan
 - Sheet C102 – Site Utility Plan
 - Sheet C103 – BMP Plan (Erosion Control)
 - Sheet C200 – Site Details
 - Sheet C201 – Site Details
 - Sheet C202 – BMP Details

The following clarifications and responses to RFI's are offered:

- Roof Framing Plan (Alternate A) was misnumbered and has been revised to Sheet S101-A and is included with this addendum.
- Tufftec Lockers by Scranton Products are an acceptable equivalent to Specification Section 08500.

End of Addendum No. 1

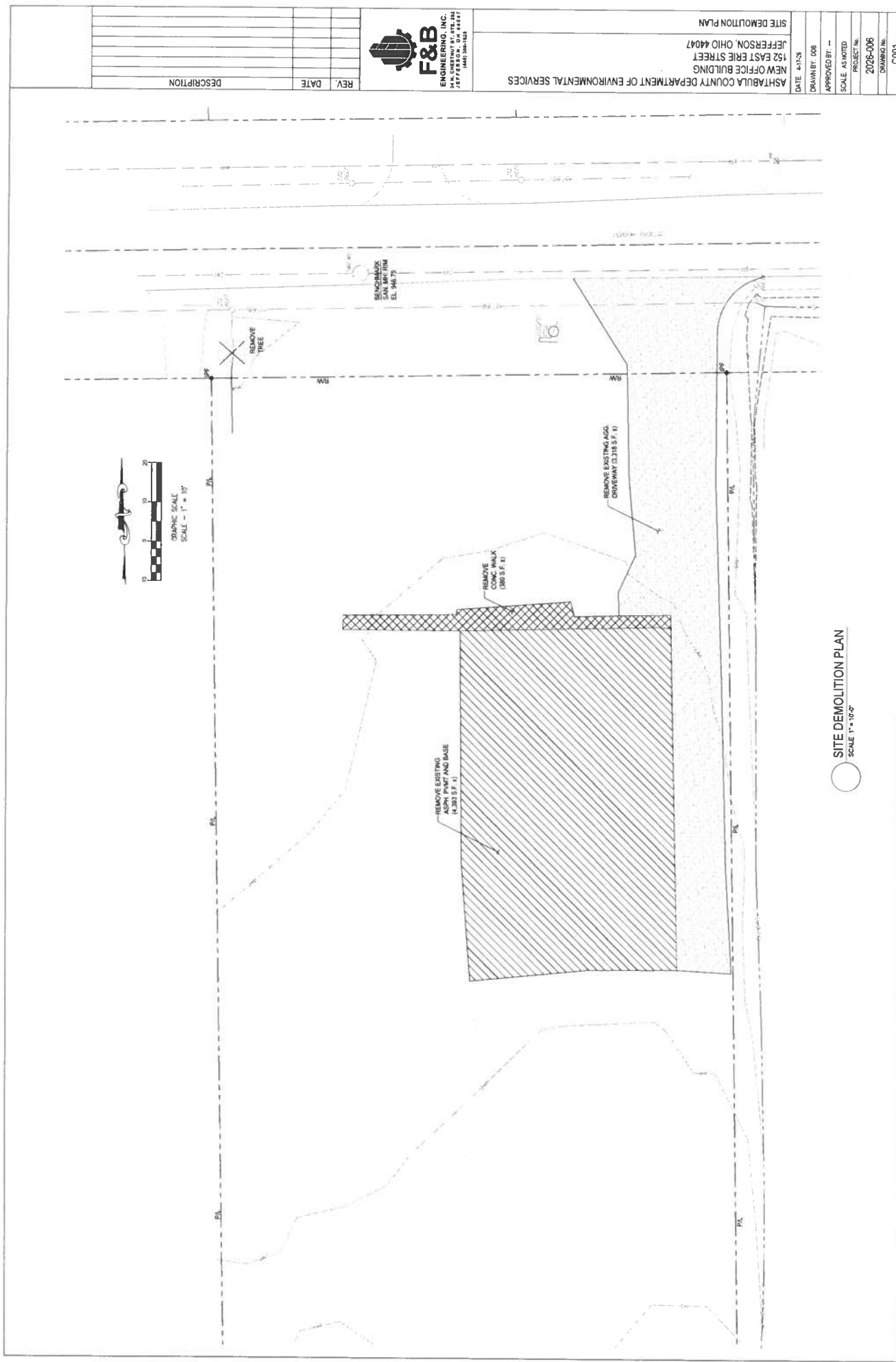


Respectfully,

A handwritten signature in black ink, appearing to read "Dennis D. Bowman". The signature is fluid and cursive, with the first name "Dennis" and last name "Bowman" clearly distinguishable.

Dennis D. Bowman, P.E.
Plans Examiner





SITE DEMOLITION PLAN
SCALE 1" = 10'-0"

REV.	DATE	DESCRIPTION

F&B
ENGINEERING, INC.
14 N. CROSBY ST., STE. 202
JEFFERSON, OHIO 44047
440.366.1211
440.366.1212

ASHTABULA COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
NEW OFFICE BUILDING
152 EAST ERIE STREET
JEFFERSON, OHIO 44047
SITE DEMOLITION PLAN

DATE:	4/1/23
DRAWN BY:	DOB
APPROVED BY:	—
SCALE:	AS NOTED
PROJECT NO.:	2023-006
DRAWING NO.:	C001













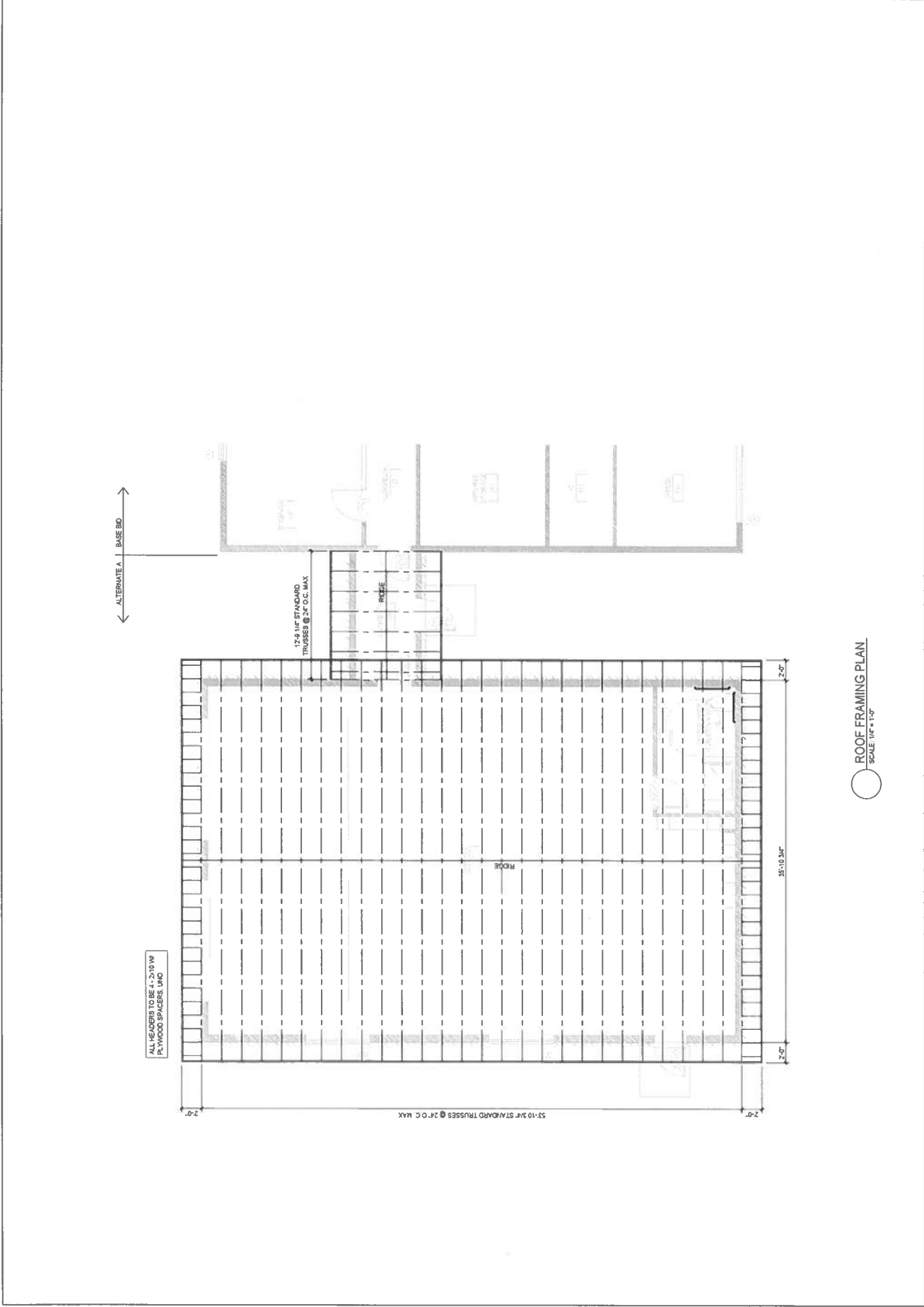




F&B
ENGINEERING, INC.
34 N. CHESTNUT ST., STE. 202
JEFFERSON, OHIO 44047
(440) 344-1414

ASHTABULA COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
NEW OFFICE BUILDING
152 EAST ERIE STREET
JEFFERSON, OHIO 44047
ROOF FRAMING PLAN (ALTERNATE A)

DATE	4-17-18
DRAWN BY	DOB
APPROVED BY	—
SCALE	AS NOTED
PROJECT NO.	2018-006
SHEET NO.	2018-006
SHEET 1 OF 1	



ROOF FRAMING PLAN
SCALE 1/4" = 1'-0"



F & B Engineering, Inc.

Governmental Solutions, Plan Review Services, Inspection Services, & Design Services

This addendum must be acknowledged in your bid in order for your bid to be considered for award of this project. It can be acknowledged on the bid form sheet or this cover sheet may be included in your bid. Failure to acknowledge this addendum will result in the rejection of your bid.

Date of Issue: May 19, 2026

Addendum Number: No. 2

Project: Ashtabula County Department of Env. Services Office Building

Bid Opening: May 22, 2026 @ 3:00 p.m.

The following clarifications and responses to RFI's are offered:

1. Is tele/data by others?

Yes, rough in is by electrical contractor and the County will install tele/data in house.

2. Should we install a 4" conduit to the utility pole for tele/data services?

Yes, 2 spare 4-in schedule 40 PVC conduits should be installed adjacent to conduit for electrical service conductors. One will be used for tele/data and one will be a spare for future use.

3. On Sheet A800-A, the general note under the Door Schedule indicates all wood doors are to be Red Oak veneer. The Spec Section 08211 – Flush Wood Doors, Paragraph 2.04 B indicates the doors to be Plain Sliced Maple. Which is correct?

All wood door veneer to be plain sliced red oak, AWS Custom Grade Architectural "A" grade.

4. Under slab vapor barrier mentions 6 Mil on drawings but "General structural notes" on S001 mentions 10Mil?

Under slab vapor barrier to be 6 mil.

5. Is it the intentions that ALL of the perimeter slab on grade will require edge forming due to no perimeter masonry block?

Yes, it is intended the building slab will be edge formed.

6. Is there a Civil drawing showing the Alt. 1 Garage built? (Not sure if additional site curbs or walks will be needed if Alt.1 is accepted)

General Site Layout provided if Alt. 1 is accepted. Specific elevations/grading plan to be provided for construction if awarded.

7. Is there a concrete requirement for the drive entrance apron or will it be asphalt?

There is no concrete requirement for the apron and it is anticipated it will be asphalt.

8. Please verify no reinforcement requirement for the exterior sidewalks and/or frost slab foundations.

No reinforcement is required for exterior sidewalks. The frost slabs shall have a layer of #6 bar at 12-inches max each way, 2-inches below the top surface.

The following information and clarifications are offered:

1. Attention is called to the substantial completion duration for the project which is 180 calendar days from the issuance of the notice to proceed. The definition of substantial completion is when the work is sufficiently finished for the owner to occupy or use the building for its intended purpose with minor items permitted to be incomplete. Failure to complete the project per the above timeframe will result in liquidated damages being applied at a rate of \$500.00 per calendar day. The Storage Building indicated in Alternate #1 will have a substantial completion duration of 240 calendar days from the issuance of the notice to proceed if awarded.
2. It is anticipated that some exterior work including but limited to asphalt paving and final restoration may not be completed until the spring of 2027. However, at a minimum and prior to substantial completion, the intermediate asphalt course shall be installed per the standard parking lot section. At contractor's option, if only the intermediate course is installed, temporary ramping at pavement transitions, walks, etc. will be installed at no additional cost to the owner.
3. The contractor shall include the following allowances in his/her base bid:
 - a. Utility Service/Tap-In Allowance: \$15,000.00
 - i. This includes all direct costs invoiced by the utility owners for work related to the new building utilities. The contractor may mark up these invoices at a 5% administrative cost.
 - b. General Allowance: \$30,000.00
 - i. This is a general allowance to address minor project changes or unforeseen conditions that may occur during the construction process. The contractor may mark up work under this allowance in accordance with the general conditions for quoted or T&M work.
 - c. Access Control (Door) Allowance: \$10,000.00
 - i. This includes direct costs from Owner's access control vendor (Vector Security). Contractor to include rough-in for 1 interior door and 2 exterior doors per the detail included in this addendum.
 - d. Material Testing Allowance: \$10,000.00

- i. This allowance will be utilized by contractor for 3rd party material testing for soils (compaction testing, bearing capacity/subgrade verification, and concrete (slump, air content, temperature, and cylinders for 7/28 days strength). The material tester must be approved by the owner. Contractor may markup invoices at a 5% administrative cost.

e. Dumpster Enclosure Allowance: \$15,000.00

- i. This includes the installation of an enclosure for a dumpster. Size, details, and exact location are to be determined in the future.

Any portion of any allowance not utilized shall be credited back to the owner via change order.

4. The contractor shall include the following allowances in his/her bid price for Alternate #1:

a. General Allowance: \$25,000.00

- i. This is a general allowance to address any unforeseen conditions and minor grading/stormwater not specifically detailed on Alternate Site Layout Sheet SK-2. The contractor may mark up work under this allowance in accordance with the general conditions for quoted or T&M work.

Any portion of any allowance not utilized shall be credited back to the owner via change order.

- 5. Contractor shall include an additional 200-ft of 1-inch PVC conduit and 10 junction boxes for rough in of future security cameras. Final placement to be indicated in field.
- 6. A generator and automatic transfer switch has been added as Alternate #2. Please find updated bid form included in this addendum. Generator shall be Generac Protector XG Series 40 kW (120/240) Single Phase, with optional E-Stop and Level 2 Sound Reduction, natural gas with G0099300 Non-Service Entrance Rated Automatic Transfer Switch. Generator to be installed on 48-inch-wide x 96-inch-long x 18-inch-deep reinforced concrete pad with #6 bars at 12-inches on center each way on the top and bottom of the pad. Generator is to be installed on the east side of the building immediately outside the Mechanical/Electrical Room. Alternate shall include any required branch circuits (e.g. battery charger, block heater, etc.) as well as any control circuits and to connect gas piping shown on sheet M200 to the generator (gas meter load to be 1,000 CFH). If awarded, Electrical Panels A and B will have their circuits rearranged for emergency / non-emergency use. This information will be provided by the Owner and engineer.
- 7. Please find non-collusion affidavit included in this addendum. This form must be submitted with contractor's bid.
- 8. Find site lighting plan attached to this addendum which includes site lighting to be included in contractor's base bid price.
- 9. The contractor shall clean or have building cleaned to the owner's satisfaction prior to owner moving into the space.
- 10. The 2023 edition ODOT Construction and Material Specifications except for Section 100-109 shall govern site/civil related work.



11. Basis of design of vinyl siding (or approved equivalent):

- a. Lap Siding: Certaineed Monogram Double 5-in Dutch Lap, color to be selected by Owner from manufacturer's standard color range. Siding shall be installed according to the manufacturer's installation instructions.
- b. Shake Siding: Certaineed Cedar Impressions Perfection – 7-in Stright Edge, color to be selected by Owner from manufacturer's standard color range. Siding shall be installed according to the manufacturer's installation instructions.

12. Basis of design of face brick for bidding purposes is Belden Brick Company 470-479 Dark Range Smooth Modular, subject to availability/lead time and owner's final color approval. Non-colored standard mortar is anticipated.

13. The basis of design for the overhead doors for the Alternate #1 storage building is Midland Garage Door Mfg Co., 2-inch ThermoGuard, Standard Lift, Heavy Duty Hardware, 24"x12" Windows (Low E Glass) or approved equivalent. Owner to select color from manufacturer's standard color range. Door operator to be Liftmaster MT5011U Medium Duty Operator complete with opener, rail assembly, wall control, safety sensors, and all installation hardware or approved equivalent.

The following documents are included in this addendum and shall become part of the Bid Documents:

- Revised Bid Form with Alternate #2 (Generator and ATS) included
- Non-Collusion Affidavit
- Site Lighting Plan Sheet SK-1
- Alternate #1 General Site Layout, Sheet SK-2
- Access Control Rough-In

End of Addendum No. 2

Respectfully,



Dennis D. Bowman, P.E.
Plans Examiner

BID FORM

ACDES NEW OFFICE BUILDING

PART 1 - BID RECIPIENT

- 1.1 This Bid is submitted to:

**Ashtabula County Commissioners
25 West Jefferson Street
Jefferson, Ohio 44047**

- 1.2 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

PART 2 - BIDDER'S ACKNOWLEDGEMENTS

- 2.1 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

PART 3 - BIDDER'S REPRESENTATIONS

- 3.1 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
- D. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
- E. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.



- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- G. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

PART 4 - FURTHER REPRESENTATIONS

4.1 Bidder further represents that:

- A. this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

PART 5 - BASIS OF BID

5.1 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Lump Sum Base Bid – ACDES Office Building, Complete:

_____	\$	_____
(words)		(numerals)

Lump Sum Alternate #1: Connector and Garage Building Complete

_____	\$	_____
(words)		(numerals)

Lump Sum Alternate #2: 40 kW Generator and Transfer Wwitch, Complete

_____	\$	_____
(words)		(numerals)



All specified cash allowances are included in the price(s) set forth above.

PART 6 -TIME OF COMPLETION

- 6.1.1 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07.B of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement
- 6.2 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the Contract Times.

PART 7 - ATTACHMENTS TO THIS BID

- 7.1 The following documents are attached to and made a condition of this Bid:
- A. Required Bid security in the form of _____
- B. All Forms, conditions, specifications, etc. listed in the Table of Contents.

PART 8 - SUBMITTED ON

- 8.1 The terms used in this Bid with initial capital letters have the meaning stated in the Instructions to Bidders, the General Conditions, and Supplementary Conditions.

PART 9-SUBMITTED ON

- 9.1 This bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____ (SEAL)
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____ (SEAL)

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____



A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____ (CORPORATE SEAL)

Attest: _____

Date of Authorization to do business in Ohio is ____/____/____.

Miscellaneous

Bidder's Business Address _____

Phone No. _____

Fax No. _____

SUBMITTED on _____, 20____.



NON-COLLUSION AFFIDAVIT

STATE OF _____)
) ss.
COUNTY OF _____)

I, _____ (name of person signing Affidavit), being duly
sworn deposes and says as follows:

That the Affiant is the _____ (title) of
_____ (name of corporation or company)

the Bidder who made the foregoing proposal or bid; that the bid proposal was genuine and not collusive; that said bidder did not collude, conspire, connive, or agree, directly or indirectly, with any bidder or other person, that such other bidder or person should refrain from bidding or submit a sham bid; further, such bidder did not in any manner, directly or indirectly, seek by agreement, or collusion, or communication, or conference with any person, to fix the bid price of either this bidder or any other bidder or to fix overhead, profit or cost element of the bid price; that said bidder did not collude, conspire or agree to secure any advantage against the Owner, or any person interested in the proposed contract. Affiant further says that all statements contained in this bid or proposal are true to the best of Affiant's knowledge and belief. Affiant further says that this bidder did not, directly or indirectly, submit this bid or the contents thereof, or divulge information or data thereto, to any other bidder or association, or to any agent or member thereof.

Affiant's Signature

Partner, if the bidder is a Partnership

Officer, if the bidder is a Corporation

Sworn to and subscribed before me this _____ day of _____, 20_____.

Notary Public

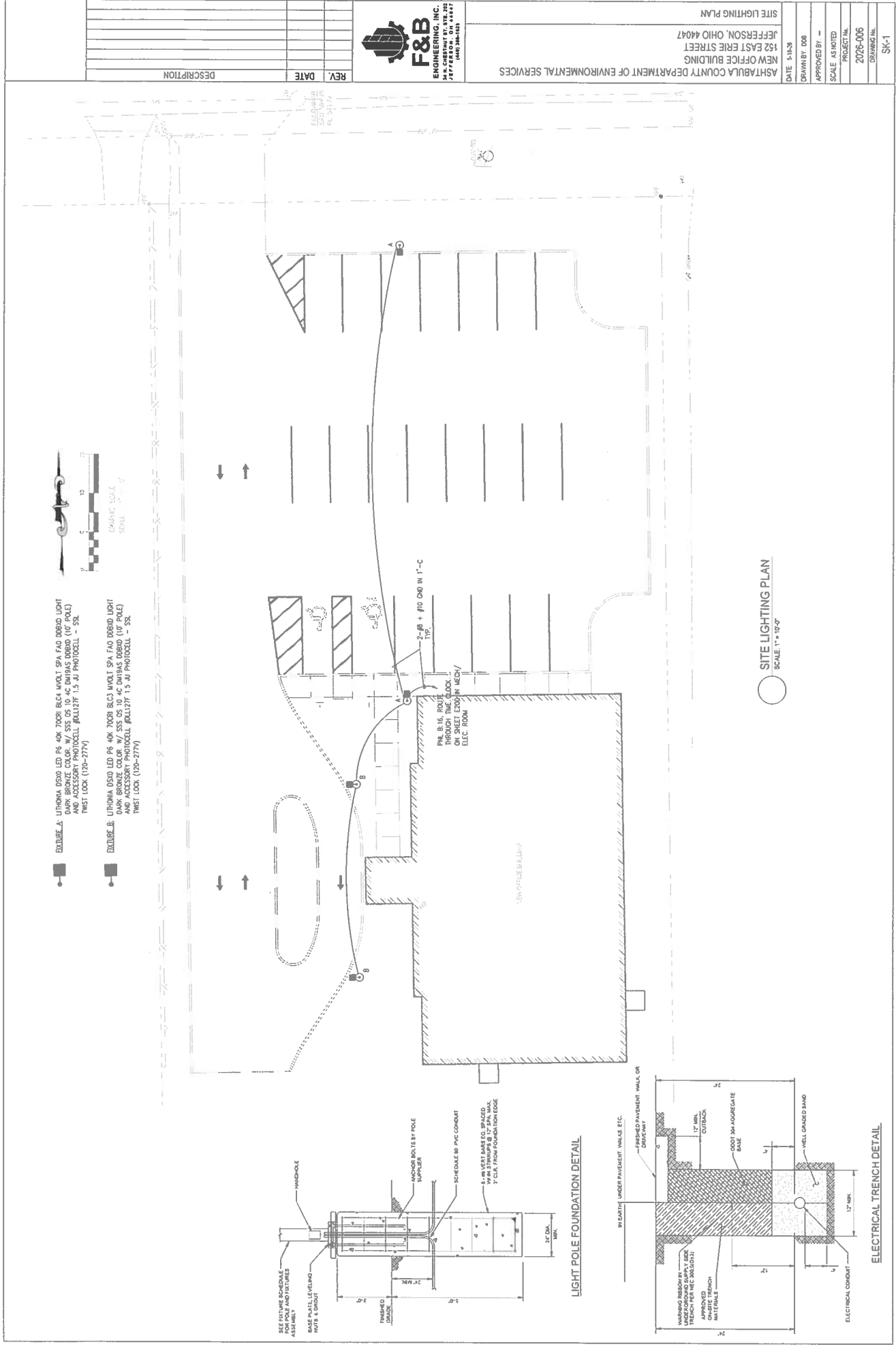
(SEAL)

County, Ohio.

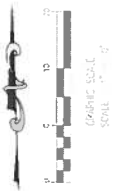
My commission expires

_____, 20_____.





- EXHIBIT A: LITHONIA D550 LED P6 40K 700R BLC3 MOLT SPA P40 D0800 LIGHT
DARK BROWN COLOR W/ SSS OS 10 AC DIM9AS D0800 (10' POLE)
AND ACCESSORY PHOTOCELL #P4127P 1.5 AJ PHOTOCELL - SSS
TWST LOCK (120-277V)
- EXHIBIT B: LITHONIA D550 LED P6 40K 700R BLC3 MOLT SPA P40 D0800 LIGHT
DARK BROWN COLOR W/ SSS OS 10 AC DIM9AS D0800 (10' POLE)
AND ACCESSORY PHOTOCELL #P4127P 1.5 AJ PHOTOCELL - SSS
TWST LOCK (120-277V)

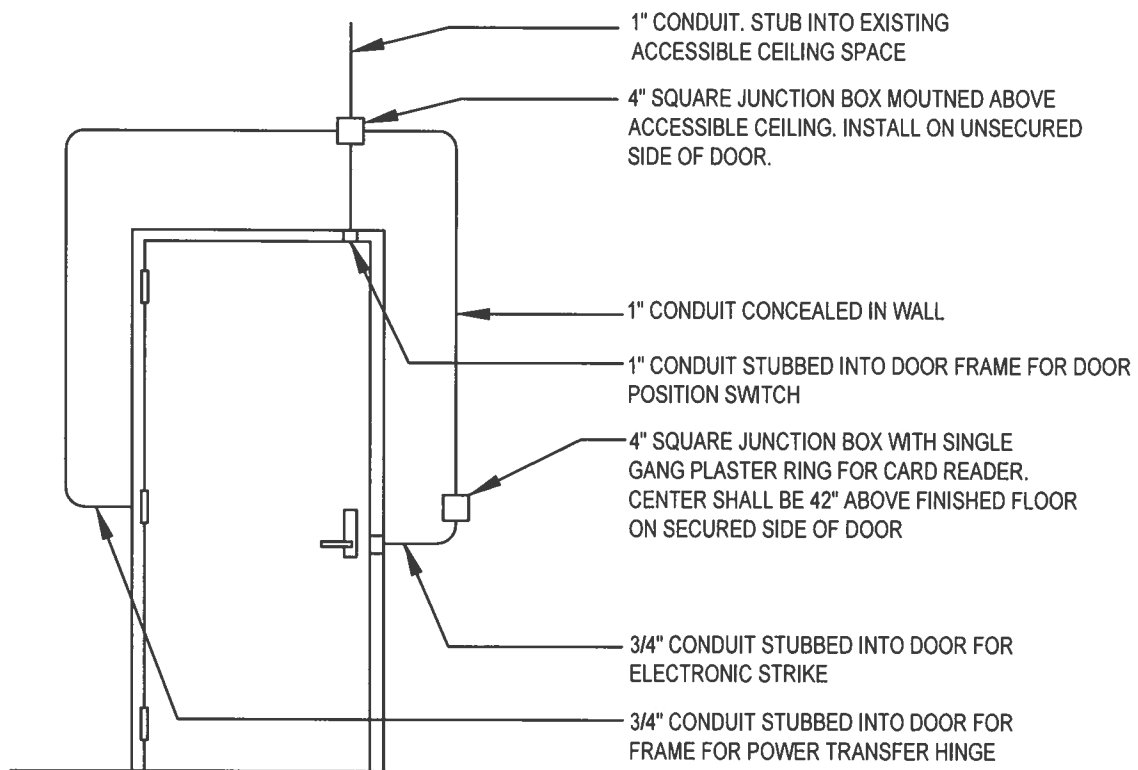


LIGHT POLE FOUNDATION DETAIL

ELECTRICAL TRENCH DETAIL







ACCESS CONTROL ROUGH-IN

NTS

TO BE INCLUDED FOR 1 INTERIOR DOOR AND 2 EXTERIOR DOORS.



The Effective Date of this Agreement shall be this _____ day of _____, 20 26

OWNER:

Ashtabula County Commissioners

Casey Kozlowski, President

Kathryn Whittington, Vice President

J.P. Ducro, IV

Address for giving notices:

25 West Jefferson Street

Jefferson, Ohio 44047

Approved as to Form:

County Prosecutor

CONTRACTOR:

R.L. Jackson Construction LLC

By:

Robert L. Jackson

Title:

Chief Executive Manager

Attest:

[CORPORATE SEAL]

Title:

N/A

Address for giving notices:

4671 ST RT 167

Pierpont, Ohio 44082