PROJECT MANUAL
February 24, 2023

UNIVERSITY OF ARKANSAS AT RICH MOUNTAIN
AUTOMOTIVE BUILDING

AMR Architects, Inc.
1424 South Main St. Suite 105, Little Rock, AR 72202
(501) 375-0378

The Architect of Record for
UA RICH MOUNTAIN - AUTOMOTIVE BUILDING is:

The following Electrical Specifications have been prepared by

Lucas Merriott and Associates

for

Rich Mountain
Automotive
Building

2/24-23

SECTION 00 01 10
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END OF SECTION

PROJECT DIRECTORY

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ISRAEL BOYCOTT RESTRICTION CERTIFICATION

Pursuant to Arkansas Code Annotated 25-1-503, a public entity □□□□□□□□enter into a contract valued at 1,000 or greater with a company unless the contract includes a written certification that the person or company is not currently engaged in, and agrees for the duration of the contract not to engage in, a boycott of Israel.

By signing below, the Contractor agrees and certifies that they do not currently boycott Israel and will not boycott Israel during any time in which they are entering into, or while in contract, with any public entity as defined in 25-1-503 If at any time after signing this certification the contractor decides to engage in a boycott of Israel, the contractor must notify the contracting public entity in writing.

If a company does boycott Israel, see Arkansas Code Annotated 25-1-503.

Name of public entity	
AASIS Vendor Number	
Contractor/Vendor name	

Contractor Signature: Date:

"Public Entity" means the State of Arkansas, or a political subdivision of the state, including all boards, commissions, agencies, institutions, authorities, and bodies politic and corporate of the state, created by or in accordance with state law or regulations, and does include colleges, universities, a statewide public employee retirement system, and institutions in Arkansas as well as units of local and municipal government.

ILLEGAL IMMIGRANT CERTIFICATION

Pursuant to Arkansas Code Annotated 19-11-105, Contractor(s) □□□□certify with OSP that they do not employ or contract with illegal immigrants.

By signing below, the Contractor agrees and certifies that they do not employ illegal immigrants and will not employ illegal immigrants during the remaining aggregate term of the contract.

Contract Number	
AASIS Number	
Description	
Contractor	

Contractor Signature: Date:

SECTION 00 65 19.13
RELEASE OF CLAIMS

Comes the undersigned, who does hereby swear and affirm that:

1. My name is: _____ , and I am doing business as: _____ and my legal address is: _____

   _____

2. Except as stated in Paragraph Four (4) below, pursuant to Contract #: _____ which was executed on: _____ , on the following project: _____

   _____.

   I have paid and have otherwise satisfied all obligations for all furnished materials and equipment, all work, labor and services performed, and for all known claims against the Contractor arising in any manner in connection with the performance of the above referenced contract for which the Owner or his property might in any way be held responsible.

3. Except as stated in Paragraph Four (4) below, to the best of my knowledge, information and belief, the releases or waivers of Claims, attached hereto and incorporated herein, includes the above referenced contract, all subcontractors, all suppliers of materials and equipment, and all performers of work, labor or services who have or may have claims against any property of the Owner arising in any manner out of the performance of the Contract.

4. The Exceptions are: (if none exists, then indicate “none”. The Contractor shall furnish bond(s) satisfactory to the Owner for each exception if so required by the Owner.

_____

_____.

_____ _____

Affiant’s Signature Date

VERIFICATION

STATE OF: ARKANSAS

COUNTY OF: _____

Subscribed and Sworn To before me this _____ day of _____ 20____.

_____

Notary Public

My Commission Expires:

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SECTION 00 72 00
AIA 201-2017 GENERAL CONDITIONS

PART 1 - GENERAL

1.1 INSTRUCTIONS

A. *The General Conditions of the Contract for Construction", AIA Document A201-2017*, Articles 1 through 15, pages 1 through 38, of the American Institute of Architects, is hereby made a part of these Documents to the same extent as if herein written out in full. The Contract sets may have a set of the AIA General Conditions posted in place of this sheet if requested by Owner and Contractor. Copies of the referenced AIA General Conditions are available for purchase at:

1. Arkansas Chapter of the American Institute of Architects,
   1020 West 4th Street Suite 400, Little Rock, AR 72201
   Tel. 501.661.1111

2. Southern Reprographics Inc.
   901 West Seventh, Little Rock, Arkansas,
   Tel: 501.372.4011
   Fax: 501.372.2902

1.2 RELATED SECTIONS

A. Section 00 73 00 - SUPPLEMENTARY GENERAL CONDITIONS

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

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SECTION 00 73 00
SUPPLEMENTARY GENERAL CONDITIONS

1. SUPPLEMENTARY GENERAL CONDITIONS: The following supplements modify the "General Conditions of the Contract for Construction", AIA Document A201, 2017 Edition. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

   A. 1.1.1. Delete the following: “(3) a Construction Change Directive.”

   B. 2.1.2 Delete

   C. 2.2.1, 2.2.2, 2.2.3, 2.2.4 Delete

   D. 2.3.6 Delete in its entirety and substitute the following: "2.3.6 The Contractor will be furnished returned deposit sets of Drawings and Project Manuals as a part of this contract. Additional sets which the Contractor may request will be supplied at the Contractor's expense."

   E. 3.4. Add the following new subparagraphs:

      1. 3.4.2.1 After award of the Contract, substitutions of products will be considered only under the conditions and in the manner specified in Section 01 25 13."

      2. "3.4.4 Contractors and subcontractors employed for work shall conform to labor laws of the State of Arkansas and the various acts amendatory and supplementary thereto, and to other laws, ordinances and legal requirements applicable thereto.

      3. 3.4.5 Mechanics whose work is unsatisfactory to the Owner or Architect, or are considered by Architect to be unskilled or otherwise objectionable, shall be instantly dismissed from work upon notice from Architect."

   F. 3.4.2 Delete all references to Construction Change Directive

   G. 3.5. Delete paragraph 3.5 in its entirety and substitute the following:

      1. "3.5. The Contractor shall absolutely guarantee and warrant his and his subcontractors' work and materials, including materials and work of suppliers of the Contractor and his subcontractors, for a period of one year from date of acceptance of project by Owner. Warranty shall be for a longer period on certain items so designated in specifications. The foregoing one-year absolute guarantee and warranty shall not in any way limit, restrict, or affect the liability of Contractor or his subcontractors for indemnity as provided for in this contract, nor shall it in any way shorten the period of limitation fixed by law for filing of any action against Contractor for enforcement or for breach of any provision of contract documents. Should Contractor elect to use any of the equipment in the building during construction period, he shall make arrangements with subcontractor or supplier that equipment for any extension of warranty of that equipment made necessary by such use. Warranty period of such equipment to Owner shall not be reduced by use of equipment by Contractor.

   H. 3.8.1 In line 1 after "Documents." add "Refer to Division 1 Section “Allowances".

   I. 3.8.2.2 At the end of the clause after allowances; but before 3.8.2.3 insert the following, "except when installation is specified as part of the allowance. Refer to Division 1 Section “Allowances".

   J. 3.9.1 Add the following at the end of the paragraph. “The Contractor is to assign a full time Project Manager who is to remain for the duration of the Project. The Project Manager is to support the Superintendent and attend all Owner Project Progress meetings.”

K. 3.10.1 At the end of the paragraph add the following: "Submit in accordance with Section 01 33 00 Submittals.

L. 3.10.1 Add the following Item .1: The Contractor shall maintain a suitable work force to adhere to time lines set forth on the Schedule. Should construction progress begin to slip the Contractor shall increase work forces, approve overtime, double work shifts, or take other measures deemed appropriate to increase job site production to recover lost progress and bring the work inline with the current established construction schedule.

M. 3.10.2 At the end of the paragraph and the following: "Submit in accordance with Section 01 33 00 Submittals.

N. 3.11. At end of the paragraph, add the following: "Submit in accordance with Section 01 70 00 Project Closeout".

O. 3.12.5 At end of subparagraph, add "Submit in accordance with Section 01 33 00 Submittals."

P. 3.12.8 Delete the following ". . .Construction Change Directive"

Q. 4.2.8. Delete the following ". . .Construction Change Directive"

R. Article 5.2 is modified by the following:

1. Article 5.2: This paragraph does not include the subcontractors protected under ACA §22-9-204.

2. 5.2.1 In line 2 delete, "as soon as practicable after award" and insert the following "fifteen days after award."

3. 5.2 Add new subparagraph as follows:"5.2.5 Where provisions of paragraph 5.2 conflict with Act 477 of 1961 of the State of Arkansas, as amended, the provisions of Act 477 shall govern."

S. 7.1 Delete all references to Construction Change Directives.

T. 7.2 Delete in its entirety and substitute the following:

1. All requests for changes, additions or deductions, shall be submitted in a complete itemized breakdown acceptable to the Owner and Architect.

2. Wherein unit prices are stated in the contract, submit itemized break down showing each unit price and it quantities.

3. The contractor shall present an itemized accounting together with appropriate supporting data for the purposes of considering additions or deductions. Supporting data shall include but is not limited to the following:

   a. Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and worker or workmen's compensation insurance;
   b. Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
   c. Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
   d. Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
   e. Additional costs of supervision and field office personnel directly attributable to the change
   f. The value of all such additions and deductions shall then be computed as set forth in Paragraph "D"
   g. The burden of proof of cost rests upon the Contractor. Contractor agrees that the owner have the right, at reasonable times, to inspect and audit the books and records of the Contractor to verify the propriety and granting of such cost.

4. Compute requests for changes be they additions or deductions as follows:
   (1) For work performed by the Sub Contractors:

Net cost of material	a
State Sales Tax	b
Net Placing cost	c
W.C. Insurance Premium and FICA Tax	d
Total ~ A	(a+b+c+d)
Overhead and profit, 12% X (a+b+c+d)	e
Total	a+b+c+d+e
Plus Contractors 5% Overhead and Profit	f
Total cost for "A"	

Credit for work omitted shall be computed as outlined in (1) "a through e" except the contractor's share of overhead and profit percentage is 7%

(2) For work performed by Contractor:

Net cost of material	a
State Sales Tax	b
Net Placing cost	c
W.C. Insurance Premium and FICA Tax	d
Subtotal ~ B	(a+b+c+d)
Overhead and profit, 12% X (a+b+c+d)	e
Allowable Bond Premium	f
Total cost for "B"	a+b+c+d+e+f

(3) Total cost of Change Order (A + B)

(4) To the cost of that portion of the work (change) that is performed by the subcontractor, the general contractor shall add an overhead and profit change of five (5%) percent plus the allowable bond premium.

(5) For Change Order that result in a deductive change the contractor and sub contractor are allowed to retain 7% of overhead and profit to cover administration cost.

U. 7.3 Delete in its entirety.

V. 9.2. At the end of subparagraph , add "Submit in accordance with Section 01 33 00."

W. Article 9.3 is modified by the following

1. At end of subparagraph, add "Submit in accordance with Section 01 33 00."
2. Add new clause as follows:
   a. "9.3.1.3. Until Substantial Completion of the Work, 5% of each progress payment will be retained. Refer to Article 9.8.5 for adjustment in retainage upon Substantial Completion of Work.

X. Refer to 9.4 "Certificates for Payment add the Following:
   a. 9.4.3 Final Payment to the Contractor: The owner shall make final payment within 30 days of completion and acceptance of the work. In the event the project extends beyond 30 days, periodic payments shall be made.
   b. 9.4.4 Processing Time: Arkansas Code 19-4-1411 allows a maximum processing time for contractor payment request. The architect is allowed five (5) work days; the state agency, board, commission or institution five (5) working days; Transmittal times are not included in processing.

Y. Refer to 9.7 Failure of Payment
   1. After "....certified by the Architect " delete the phrase "...or awarded by binding dispute resolution,"

Z. 9.8.5 At end of subparagraph, add "The payment shall be sufficient to increase the total payments to 95% of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work and unsettled claims"

AA. 9.10.2 At end of subparagraph, add the following "Submit affidavit of payment of debts and claims and affidavit

of release of liens on AIA Forms G706 and G706A, respectively or on a form acceptable to the Owner"

BB. 9.10.4.1 Delete the word “liens”

CC. Refer to 10.1 Safety Precautions and Programs: Add the following subparagraphs.
10.1.1 The contractor shall fence the project in such a manner so as to secure the agreed construction area, as provided in the Project Manual section Construction Facilities and Temporary Facilities from unauthorized entry by third parties. It shall be the sole responsibility of the contractor to determine and provide all required safety precautions, procedures and facilities to protect the public, construction workers and others who may be on the project site at all times from hazards created by construction activities.

DD. 10.3.3 Delete

EE. 10.2.9 Add after 10.2.8:
1. §10.2.9 As between Owner and Contractor, Contractor is responsible to the Owner for any and all the safety issues relating to the Work on the Project. Contractor shall administer and manage the safety program. This will include, but not necessarily be limited to review of the safety programs of each of its Subcontractors. Contractor shall monitor the establishment and execution of effective known industry safety practices, as applicable to Work on this Project, and the compliance with all applicable regulatory and advisory agency construction safety standards. Contractor shall indemnify Owner for any and all claims of injury, damage, or violation of law made against Owner due to alleged safety issues on the Project or the safety program on the Project. The Contractor’s responsibility for review, monitoring and coordination of the Subcontractor’s safety programs shall not extend to direct control over execution of the Subcontractor’s safety programs; notwithstanding Contractor’s safety obligations to the Owner, it is agreed and understood that each individual Subcontractor shall remain controlling employer responsible for the safety programs and precautions applicable to its own work and the activities of others work in areas designated to be controlled by such Subcontractors. The designation of each individual Subcontractor as the “controlling employer responsible for safety programs and precautions applicable to its own work” shall not in any way reduce Contractor’s obligation of indemnification of Owner referenced above.

FF. Delete 11.1, 11.2, 11.3, 11.4 and 11.5 in there entirety and substitute the following:

11.1 General:

11.1.1 The Contractor shall not commence work under this contract or allow any subcontractor or anyone directly or indirectly employed by any one of them to commence work until he has obtained all insurance required under this section and duly executed certificates of such insurance have been filed with the Architect and approved by the Owner and his agent. All insurance policies, certificates and endorsements shall be submitted to the Architect in duplicate, one copy of which will be retained by the Architect and the other forwarded to the Owner or his agent.

11.1.2 The Contractor shall require all subcontractors, or anyone for whose acts any of them may be liable, to either obtain statutory Workmen's Compensation, Comprehensive General Liability and Comprehensive Automobile Insurance coverage for his (the subcontractor's) portion of the work or reimburse the Contractor for providing such insurance coverage.

11.1.3 Comprehensive General Liability Insurance and Comprehensive Automobile Liability Insurance shall protect the Contractor from claims for bodily injury including death to the employees, or of any person other than his employees, and all other claims for property damage including water damage, legal liability, personal injury liability, damage from collapse, damage from grading, excavation and all underground work, any and all of which may arise out of or result from the Contractor's operations required for the project, whether such operations be by himself or by any subcontractor or anyone directly employed by either of them.

11.1.4 Workmen's Compensation Insurance: The Contractor shall procure and maintain at his expense during the term of the contract, Workmen's Compensation Insurance and Employer's Insurance for all of his employees engaged at the site of the work, in accordance with the statutes of the State of Arkansas. In case any hazardous occupations are required for the execution of this work which are not covered

by the above insurance, a special Employer's Liability policy shall be procured and maintained by the Contractor during the term of the contract to cover workmen engaged to such hazardous occupations.

11.1.5 Comprehensive General Liability Insurance: The Contractor shall procure and maintain during the term of this contract, at the Contractor's expense, a Comprehensive General Liability policy with limits no less than $500,000 per occurrence or $250,000 each person and $500,000 aggregate for each accident for bodily injury and including also property damage coverage in minimum limits of $100,000 for each accident and $300,000 aggregate. This policy must include "Contractual Coverage" to cover contractual indemnity, and hold harmless the Owner and Architect and their agents and employees from and against all claims, damages, losses, and expenses, including attorney's fees arising out of or resulting from the performance of the work, provided such claim, damage, loss, injury, sickness, disease, death or injury to or destruction of tangible property other than the work itself, including the loss of use resulting therefrom, and is caused in whole or in part by any negligent act or omission of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it was caused in part by a party indemnified thereunder.

11.1.6 Comprehensive Automobile Liability Insurance: The Contractor shall procure and maintain during the term of the contract, at the Contractor's expense, Comprehensive Automobile Liability limits not less than $500,000 per occurrence for bodily injury and $500,000 limit per occurrence for Property Damage Coverage (not less than $500,000 combined single limit). This policy shall include non-owned and hired cars and/or trucks.

11.2 Protective Liability Insurance

11.2.1 The Contractor shall procure and maintain during the term of this contract, Owners Protective Liability Insurance with an endorsement to the policy to include as additional insured, the Architect and the Architect’s employees and consultants, with limits not less than $1,000,000 per occurrence for bodily injury liability and $1,000,000 per occurrence for Property Damage Liability

11.3 Property Insurance

11.3.1 The Contractor shall take out and maintain during the life of the contract and until the same has been accepted, Builder's Risk, Fire Extended Coverage, Vandalism, and Malicious Mischief Insurance for an amount equal to 100% of the insurance property value of the project less the cost of any excavation, brick, stone, or concrete foundation, piers or other supports which are below the undersurface of the lowest basement floor, or where there is no basement, piers which are below the surface of the ground or underground flues, pipes or wiring. The said insurance coverage to be written in the name of the Contractor and Owner. The Owner’s insurance cost-to-rebuild may be covered under General Liability, with the Builder’s Risk limited to the amount of the contract.

11.3.2 The required insurance must be written by a company licensed to do business in the State of Arkansas at the time the policy is issued. In addition, the companies must be acceptable to the Owner and his Agent.

11.3.3 The Contractor shall not cause any insurance to be canceled nor permit any insurance to lapse. All insurance policies shall contain a clause to the effect that the policy shall not be canceled or reduced, restricted or limited until fifteen days after the Owner and Construction Coordinator have received written notice as evidenced by return receipt of registered or certified letter. Certificates of insurance shall contain transcripts from the proper office of the insurer, evidencing in particular those insured, the extend of the insurance, the location, and the operations to which the insurance applies, the expiration date, and the above mentioned notice of cancellation clause.

11.4 Performance Bond and Payment Bond

11.4.1 A successful bidder shall furnish a Performance and Payment bond within 10 days after receipt of the Intent to Award notice. Failure to furnish the required bonds may cause forfeiture of bid guarantee to the owner as liquidated damages.

A. The Contractor shall furnish a "Performance and Payment Bond" in the amount equal to 100% of the contract price as security for the faithful performance of this contract and for payment of all indebtedness for labor and materials furnished or performed in connection with this contract. The bond shall be written by a surety company which is qualified and is authorized to do business in the State of Arkansas and must be executed by a resident local agent who shall be entitled to full commission paid local agents and who is licensed by the Insurance Commissioner to represent the surety company executing said bond and filing with said bond, his power of attorney as his authority. The mere countersigning of a bond will not be sufficient. The bond shall be written in favor of the Owner and executed. An original and two (2) copies of the bond must be furnished, with power of attorney attached to each. The contractor shall file (not record) the original with the Clerk in the Circuit Court of the County in which the work is to be performed is located. The contractor is to pay all expense incident to the filing of the bond. The remaining two copies should be certified by the Clerk to evidence the filing of the original and these two copies submitted to the Owner.

B. Use the Performance and Payment Bond form, provided within these specifications.

C. Pursuant to A.C.A. Section 22-9-308 (d), all contractor bonds must include such provision as will guarantee the faithful performance of the prevailing wage rate determination as provided by this contract.

GG. 13.1 Governing Law; After ".... were the Project is located...." Delete "...except that, if the parties have selected arbitration as the method of binding resolution, the Federal Arbitration Act shall govern Section 15.4."

HH. In Section 13 MISCELLANEOUS PROVISIONS After Section 13.5 Add the following Section:

13.6 EMPLOYMENT POLICIES

13.6.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of any or other forms of compensation; and selection for training; including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

13.6.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin".

13.6.3 The Contractor shall not permit it employees, subcontractors or employees of subcontractors who are sex offenders to work on the **AUTOMOTIVE BUILDING**

13.6.4 The Contractor shall not permit its employees, subcontractors or employees of subcontractors to engage in sexually harassing behavior towards UA - Rich Mountain staff, or any other persons present on UA -Rich Mountain property.

13.6.5 Pursuant to ACT 157 of 2007, The Contractors shall not employ illegal immigrants and shall not permit its sub-contractors to employ illegal immigrants.

13.6.6 The Contractor acknowledges that UA - Rich Mountain is tobacco free, and consistent with this policy, shall not allow its employees or employees of subcontractors to use tobacco products while on University Property

13.6.7 The Contractor acknowledges that fire arms are prohibited on UA - Rich Mountain property, even if a person has a concealed weapons permit, and consistent with this policy, shall not allow its employees or employees of subcontractors to bring firearms on UA - Rich Mountain property.

13.6.8 The Contractor acknowledges that Identification Badges are required while on UA - Rich Mountain property, and consistent with this policy the contractor shall provide I.D. Badges to all of its employees, and employees of subcontractors. The badges shall consist of a Photo of the person with clear indication of the Company name and the name of the employee.

13.6.9 The Contractor shall not allow its employees or employees of subcontractors to park on the grass, or sidewalks; block or impede traffic; or create traffic hazards of any sort.

13.6 COMMENCEMENT AND COMPLETION OF WORK
13.6.1 The Contractor shall Complete the Work as described in the Contract Documents on or before the date Stipulated on the Bid Form.

13.6.2 Should the Contractor fail to complete the said works within the Stipulated time, or any agreed extension thereof, he shall pay the owner Liquidated Damages for each calender day of delay beyond that time. The amount of damages is stipulated on the Bid Form.

II. 14.1.3 Delete and insert: If the Owner substantially breaches an obligation in 14.1.1 or 14.1.2 of this Contract, following seven days' written notice to the Owner, the Contractor may terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, construction equipment and machinery, including reasonable overhead, profit and damages for work performed.

JJ. 15.1.6.2 is modified by incorporating the following.

15.1.6.2.1 The period of time for adverse weather conditions shall be compared to the previous 5 year monthly average with days of .25 inches or more of rain. Additional time in excess of the days allowed herein, may be considered if the Contractor provides documented evidence validating how the weather adversely affected the construction time. Submit in accordance with Section 01 33 00 Submittals. The Architect will review claims and make recommendations to the Owner about acceptance or rejection of each claim.

15.1.6.2.2 The contractor shall factor into their Construction Schedule the following normal and reasonably anticipated weather days.

January	4 days
February	4 days
March	3 days
April	3 days
May	3 days
June	3 days
July	4 days
August	3 days
September	4 days
October	3 days
November	3 days
December	3 days

KK. Refer to 15.2.1 Delete all references to "mediation" and "binding dispute resolution."

LL. Refer to 15.2.5 Delete all references to "mediation" and "binding dispute resolution."

MM. Refer to 15.2.6 Delete all references to "mediation" and "binding dispute resolution."

NN. Refer to 15.3 Mediation; Delete in its entirety and substitute the following.
1. Parties agrees that the under Arkansas Code Annotated 19-10-201 that the Arkansas State Claims Commission shall be the exclusive forum for resolving all unresolved Disputes arising from the performance or non-performance of the contract.

OO. Refer to 15.4 Arbitration; Delete in its entirety

Miscellaneous: "All laws, rules and regulations of the State of Arkansas shall take precedence over any statements and/or inferences made in the AIA 201-2017 document. Nothing in AIA 201-2007 shall be construed as a waiver of the State of Arkansas or it's entities sovereign immunity."

(This is a recommenced recap cover letter printed on the contractor letter head to accompany each of the Change Order .)

Contractors Name date
mailing address
city, state, zip code

Ref: Project Name
Change Order Request # COR-000
Architects Proposal Request # APR-000

Gentlemen

Find attached for your review the cost associated with the proposed changes described in Architects Proposal Request #-000

This change will result in a cost Addition/Reduction to our contract in the amount of. $0.00
And will require additional contract time in the amount of . . . . . (0 Days)

We are awaiting your review and approval before proceeding with the work described.

Sincerely

Company Name

Attached: COR-000, APR-000

CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM

F-1

Failure to complete all of the following information may result in a delay in obtaining a contract, lease, purchase agreement, or grant award with any Arkansas State Agency.

SOCIAL SECURITY NUMBER			FEDERAL ID NUMBER	SUBCONTRACTOR	SUBCONTRACTOR NAME
TAXPAYER ID	----	---- OR	----	☐ Y ☐ N	

IS THIS FOR:

TAXPAYER ID NAME ☐ G ☐ S ☐ B

YOUR LAST NAME FIRST NAME M.I.

ADDRESS

CITY STATE IP CODE --- COUNTRY

AS A CONDITION OF OBTAINING, EXTENDING, AMENDING, OR RENEWING A CONTRACT, LEASE, PURCHASE AGREEMENT, OR GRANT AWARD WITH ANY ARKANSAS STATE AGENCY, THE FOLLOWING INFORMATION MUST BE DISCLOSED:

FOR INDIVIDUALS*

Indicate below if you, your spouse or the brother, sister, parent, or child of you or your spouse *is* a current or former member of the eneral Assembly, Constitutional Officer, State Board or Commission Member, or State Employee

Position Held	Mark (√)		Name of Position of ob Held senator, representative, name of board/ commission, data entry, etc.	For How Long		What is the person(s) name and how are they related to you i.e., ane Q. Public, spouse, ohn Q. Public, r., child, etc.	
	Current	Former		From MM/	To MM/	Person s Name(s)	Relation
eneral Assembly							
Constitutional Officer							
State Board or Commission Member							
State Employee							

☐ N

FOR AN ENTITY (BUSINESS)*

Indicate below if any of the following persons, current or former, hold any position of control or hold any ownership interest of 10 or greater in the entity member of the eneral Assembly, Constitutional Officer, State Board or Commission Member, State Employee, or the spouse, brother, sister, parent, or child of a member of the eneral Assembly, Constitutional Officer, State Board or Commission Member, or State Employee. Position of control means the power to direct the purchasing policies or influence the management of the entity.

Position Held	Mark (√)		Name of Position of ob Held senator, representative, name of board/commission, data entry, etc.	For How Long		What is the person(s) name and what is his/her of ownership interest and/or what is his/her position of control		
	Current	Former		From MM/	To MM/	Person s Name(s)	Ownership Interest ( )	Position of Control
eneral Assembly								
Constitutional Officer								
State Board or Commission Member								
State Employee								

☐ N

**NOTE: PLEASE LIST ADDITIONAL DISCLOSURES ON SEPARATE SHEET OF PAPER IF MORE SPACE IS NEEDED*

7/1/98 Rev. 11-29-00

Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this contract. Any contractor, whether an individual or entity, who fails to make the required disclosure or who violates any rule, regulation, or policy shall be subject to all legal remedies available to the agency.

A[illegible], [illegible], [illegible], [illegible] *state agency* I [illegible]

1. Prior to entering into any agreement with any subcontractor, prior or subsequent to the contract date, I will require the subcontractor to complete a **CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM**. Subcontractor shall mean any person or entity with whom I enter an agreement whereby I assign or otherwise delegate to the person or entity, for consideration, all, or any part, of the performance required of me under the terms of my contract with the state agency.

2. I will include the following language as a part of any agreement with a subcontractor:

   Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this subcontract. The party who fails to make the required disclosure or who violates any rule, regulation, or policy shall be subject to all legal remedies available to the contractor.

3. No later than ten (10) days after entering into any agreement with a subcontractor, whether prior or subsequent to the contract date, I will mail a copy of the **CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM** completed by the subcontractor and a statement containing the dollar amount of the subcontract to the state agency.

I certify under penalty of perjury, to the best of my knowledge and belief, all of the above information is true and correct and that I agree to the subcontractor disclosure conditions stated herein.

Signature___________________________ Title___________________________ Date________________

Vendor Contact Person____________________ Title________________________ Phone No.____________

AGENCY USE ONLY

Agency Number_______ Agency Name______________________ Agency Contact Person_________________________ Contact Phone No.____________ Contract or rant No.___________

NOTE: PLEASE LIST ADDITIONAL DISCLOSURES ON SEPARATE SHEET OF PAPER IF MORE SPACE IS NEEDED

SECTION 01 10 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. General Project Information.

B. Scope of Work.

C. Work by Others.

D. Contractor Use of Site and Premises.

E. Work Sequence.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Section 01 50 00 - Temporary Facilities and Controls

1.3 GENERAL PROJECT INFORMATION

A. Project Name: **UA RICH MOUNTAIN -BASEBALL AND SOFTBALL CENTER**

B. The Project, located at UA Rich Mountain Campus in Mena, Arkansas, includes but is not necessarily limited to the construction of a new Automotive Building for mechanic education, including an open mechanical work area, open classroom space, storage, instructor office, and restrooms.

1.4 SCOPE OF WORK

A. Contractor shall provide all work, supervision, labor, materials, transportation, scaffolding, clean up and any other services necessary to perform the construction of this project, complete in every detail, within the limits shown on the construction documents. Comply with the pertinent provisions of the General Conditions of the contract.

1.5 CONTRACTOR USE OF SITE AND PREMISES

A. The start date for the project will be set by a Notice to Proceed, which will be issued upon receipt of the executed contract from the Contractor and Owner.

B. The Contractor's use of the premises is limited by the Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of the project.

C. Storage and staging will be limited to areas agreed to by the Owner and Contractor.

D. Parking will be limited to areas agreed to by the Owner and Contractor. Parking or storage under trees will not be permitted.

E. A pre-construction conference will be held to assist the Contractor in coordinating the use of the site, parking, etc.

F. The work of this contract will be allowed to be performed during hours as coordinated between the Owner's proect representative and the contractor.

G. Provide access to and from the site as required by law and by the owner:
   1. Do not obstruct roadways, sidewalks or other public ways without permission from the Owner and/or governing authorities.

SECTION 01 10 00
SUMMARY OF WORK

I. Cleaning Up - During Construction:
   1. The Contractor shall, during the process of work, keep the Project clear of all rubbish.
   2. Suitable containers with covers are to be provided for all refuse from meals eaten on the job site and removed from the job site at least once in every 72 hour period. One of these containers is to be placed beside each drinking water facility to receive discarded paper cups. All bottles, cans, paper and garbage of every description are to be constantly picked up and placed in the covered containers. All workmen are to be advised of the contents of this paragraph and nothing short of their full cooperation is considered reasonable.
   3. Keep streets adjacent to the project free of dirt, debris and other materials transported to and from the project.

J. Harassment: Harassment of the public by contractor's or subcontractor's personnel will not be tolerated. The contractor will take whatever precautions are necessary to prevent and/or eliminate any harassment of employees or the public by contractor's personnel.

K. Smoking wil be permitted only in designated areas.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION (Not applicable).

END OF SECTION

SECTION 01 25 13
PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section 01 33 00 - Submittals.

C. Standards: Refer to Section 01 42 19 - Reference Standards and Definitions for applicability of industry standards to products specified.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:
   1. Revisions to Contract Documents requested by the Owner or Architect.
   2. Specified options of products and construction methods included in Contract Documents.
   3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. Substitution Request Submittal: No substitutions unless previously discussed and approved. Requests received more than 7 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
   1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
   2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
      a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
      b. Samples, where applicable or requested.
      c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
      d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.
      e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
      f. Cost information, including a proposal of the net change, if any in the Contract Sum.

SECTION 01 25 13
PRODUCT SUBSTITUTIONS

g. **Certification by the Contractor** that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

3. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, which ever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.
   1. Extensive revisions to Contract Documents are not required.
   2. Proposed changes are in keeping with the general intent of Contract Documents.
   3. The request is timely, fully documented and properly submitted.
   4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
   5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
   6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
   7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
   8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
   9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
   10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 26 00
MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections: The following sections contain requirements that relate to this section:

1. Division 1 Section 01 33 00 - Submittals for requirements for the Contractor's Construction Schedule.
2. Division 1 Section 01 29 00 - Payment Procedures for administrative procedures governing applications for payment.
3. Division 1 Section 01 25 13 - Product Substitutions for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 MINOR CHANGES IN THE WORK

A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Architect.

1.4 CHANGE ORDER PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
1. Proposal requests issued by the Architect are for information only. Do not consider them instruction either to stop work in progress, or to execute the proposed change.

2. Unless otherwise indicated in the proposal request, within 10 days of receipt of the proposal request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the proposed change.

a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.

1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Comply with requirements in Section 01 25 13 - Product Substitutions if the proposed change in the Work requires the substitution of one product or system for a product or system specified.

SECTION 01 26 00
MODIFICATION PROCEDURES

C. Proposal Request Form: Use AIA Document G 709 for Change Order Proposal Requests.

1.5 CHANGE ORDER PROCEDURES

A. Upon the Owner's approval of a Change Order Proposal Request, the Architect will issue a Change Order for signatures of the Owner and Contractor. Refer to the General Conditions for Change Order procedures.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

Refer to the change order request cost format given in the General Conditions.

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

B. The Contractor's Construction Schedule and Submittal Schedule are included in Section "Submittals".

1.3 SCHEDULE OF VALUES

A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

1. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.

B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.

1. Identification: Include the following Project identification on the Schedule of Values:

   a. Project name and location.
   b. Name of the Architect.
   c. Project number.
   d. Contractor's name and address.
   e. Date of submittal.

2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:

   a. Generic name.
   b. Related Specification Section.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that have affected value.
   g. Dollar value.
   h. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.

a. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in- place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.

7. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum by showing each Change Order as a new Line Item.

1.4 APPLICATIONS FOR PAYMENT:

A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.

D. Transmittal: Submit an electronic copy of each Application for Payment to the Architect by means ensuring receipt within 24 hours; complete, including waivers of lien and similar attachments, when required.

1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.

E. Waivers of Mechanics Lien: With each Application for Payment submit waivers of mechanics liens from subcontractors or sub- subcontractors and suppliers for the construction period covered by the previous application.

1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the application.

a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of Work covered by the application who could lawfully be entitled to a lien.

5. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Construction Schedule (preliminary if not final).
5. Submittal Schedule (preliminary if not final).
6. Copies of building permits
7. Copies of authorizations and licenses from governing authorities for performance of the Work.
8. Initial progress report.
9. Certificates of insurance and insurance policies.
10. Performance and payment bonds (if required).
11. Data needed to acquire Owner's insurance.

G. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial

Completion issued previously for Owner occupancy of designated portions of the Work.

H. Administrative actions and submittals that shall proceed or coincide with this application include:

1. Occupancy permits and similar approvals.
2. Warranties (guarantees) and maintenance agreements.
3. Test/adjust/balance records.
4. Maintenance instructions.
5. Meter readings;.
6. Start-up performance reports.
7. Change-over information related to Owner's occupancy, use, operation and maintenance.
8. Final cleaning.
9. Application for reduction of retainage, and consent of surety.
10. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

I. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Assurance that unsettled claims will be settled.
4. Assurance that Work not complete and accepted will be completed without undue delay.
5. Transmittal of required Project construction records to Owne.
6. Proof that taxes, fees and similar obligations have been paid.
7. Removal of temporary facilities and services.
8. Removal of surplus materials, rubbish and similar elements.
9. Change of door locks to Owner's access.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
   1. Coordination.
   2. Administrative and supervisory personnel.
   3. General installation provisions.
   4. Cleaning and protection.

B. Progress meetings, coordination meetings and pre-installation conferences are included in Section 01 31 19 - Project Meetings.

C. Requirements for the Contractor's Construction Schedule are included in Section 01 33 00 - Submittals.

1.3 COORDINATION

A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
   1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
   2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.

B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
   1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of schedules.
   2. Installation and removal of temporary facilities.
   3. Delivery and processing of submittals.
   4. Progress meetings.
   5. Project Close-out activities.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

SECTION 01 31 13
PROJECT COORDINATION

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. **Refer questionable choices to the Architect for final decision.**

F. Recheck measurements and dimensions, before starting each installation.

G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

3.2 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
   1. Thermal shock.
   2. Excessively high or low humidity.
   3. Air contamination or pollution.
   4. Water or ice.
   5. Combustion.
   6. Unusual wear or other misuse.
   7. Contact between incompatible materials.
   8. Destructive testing.
   9. Misalignment.
   10. Excessive weathering.
   11. Unprotected storage.
   12. Improper shipping or handling.
   13. Theft.
   14. Vandalism.

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings including but not limited to:
   1. Pre-Construction Conference.
   2. Pre-Installation Conferences.
   3. Coordination Meetings.
   4. Progress Meetings.

B. Construction schedules are specified in another Division-1 Section.

1.3 PRE-CONSTRUCTION CONFERENCE

A. Schedule a pre-construction conference and organizational meeting at the Project site or other convenient location no later than 7 days after execution of the Agreement and prior to commencement of construction activities. Conduct the meeting to review responsibilities and personnel assignments.

B. Attendees: The Owner, Architect and their consultants, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress including such topics as:
   1. Tentative construction schedule.
   2. Critical Work sequencing.
   3. Designation of responsible personnel.
   4. Procedures for processing field decisions and Change Orders.
   5. Procedures for processing Applications for Payment.
   6. Distribution of Contract Documents.
   7. Submittal of Shop Drawings, Product Data and Samples.
   8. Preparation of record documents.
   9. Use of the premises.
   10. Office, Work and storage areas.
   11. Equipment deliveries and priorities.
   12. Safety procedures.
   13. First aid.
   14. Security.
   15. Housekeeping.
   16. Working hours.

1.4 COORDINATION MEETINGS

A. Conduct Project coordination meetings at regularly scheduled times convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special pre-installation meetings.

B. Request representation at each meeting by every party currently involved in coordination or planning for the

construction activities involved.

C. Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.5 PROGRESS MEETINGS

A. Conduct progress meetings at the Project site at regularly scheduled intervals. Notify the Owner and Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

B. Attendees: In addition to representatives of the Owner and Architect, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
   1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
   2. Review the present and future needs of each entity present, including such items as:
      a. Interface requirements.
      b. Time.
      c. Sequences.
      d. Deliveries.
      e. Off-site fabrication problems.
      f. Access.
      g. Site utilization.
      h. Temporary facilities and services.
      i. Hours of Work.
      j. Hazards and risks.
      k. Housekeeping.
      l. Quality and Work standards.
      m. Change Orders.
      n. Documentation of information for payment requests.

D. Reporting: No later than 3 days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
   1. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 33 00
SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

B. Section 01 70 00 - Project Closeout: closeout submittals.

C. Section 01 78 00 - Warranties.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;
   1. Contractor's construction schedule.
   2. Submittal schedule.
   3. Shop Drawings.
   4. Product Data.
   5. Samples.

B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
   1. Permits.
   2. Applications for payment.
   3. Insurance certificates.
   4. List of Subcontractors.

C. Inspection and test reports are included in Section 01 40 00 - Quality Control Services.

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
      a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
   3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
      a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
      b. If an intermediate submittal is necessary, process the same as the initial submittal.
      c. Allow two weeks for reprocessing each submittal.
      d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: **Package each submittal by appropriate individual Specification Section**. **Do not include more than one Specification Section per transmittal.**
   1. Provide a Cover Sheet or Label on each submittal for identification. Labels should be used on physical sample submittals; Refer to Section 1.8 below. Indicate the following information on the cover sheet or label for

processing and recording action taken:
a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Name and address of subcontractor.
f. Name and address of supplier.
g. Name of manufacturer.
h. Number and title of appropriate individual specification section.
i. Include Contractor's certification that information has been reviewed prior to transmitting to Architect, and information complies with Contract Document requirements.
j. Record deviations from Contract Document requirements, including minor variations and limitations, as appropriate.
k. Drawing number and detail references, as appropriate.

C. Submittal Transmittal: Package each submittal by appropriate Specification Section, and transmit from the Contractor to Architect using a separate Transmittal Form from the above mentioned Cover Sheet or Label. Refer to sections 1.6-1.9, below, for required method of transmission. Include the following information on the Transmittal for processing:
1. Project Name
2. Date
3. Name of Architect
4. Name and Address of Contractor
5. Record relevant information and requests for data.

D. **The following are grounds for submittal return without action**:
1. Submittals received without Transmittal
2. Submittals received without Cover Sheet or Label
3. Submittals received are not organized by appropriate individual Specification Section or include more than one Specification Section per transmittal.
4. Submittals received without Contractor’s certification of prior review.
5. Submittals received do not have options clearly marked indicating applicable information.
6. Submittals received from sources other than the Contractor.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".
1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".
2. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
3. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
4. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
5. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and

installation. In particular, indicate roofing stage.

C. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

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

1.5 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.
   1. Coordinate submittal schedule with the list of subcontracts, schedule of values, as well as the Contractor's construction schedule.
   2. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
      a. Scheduled date for the first submittal.
      b. Related Section number.
      c. Submittal category.
      d. Name of subcontractor.
      e. Description of the part of the Work covered.
      f. Scheduled date for resubmittal
      g. Scheduled date for the Architect's final release or approval.

B. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

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

1.6 SHOP DRAWINGS

A. Electronically submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Transmit Shop Drawings electronically. Include the following information:
   1. Dimensions.
   2. Identification of products and materials included.
   3. Compliance with specified standards.
   4. Notation of coordination requirements.
   5. Notation of dimensions established by field measurement.

C. Sheet Size: Except for templates, patterns and similar full- size Drawings, submit Shop Drawings on electronic

sheets at least 8-1/2" x 11" but no larger than 36" x 48" in pdf format.

D. Initial Submittal: Submit electronic file, in .pdf format, for the Architect's review
E. Final Submittal: Submit electronic file, in .pdf format, for the Architect's review
    1. A printed copy of the final submittal shall be maintained as a "Record Document".
F. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.
G. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
    1. Do not proceed with installation until an applicable copy of Shop Drawings is in the installer's possession.
    2. Do not permit use of unmarked copies of Shop Drawings in connection with construction.

1.7 PRODUCT DATA

A. Collect Product Data into a single electronic submittal, in .pdf format, for each element of construction or system. Product Data includes information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard data is not suitable for use, submit as "Shop Drawings."
B. Mark to show applicable choices and options. Where Product Data includes information on several products, some of which are not required, mark to indicate the applicable information. If submittal does not have options clearly marked, it will be returned with out action. Include the following:
    1. Manufacturer's recommendations.
    2. Compliance with recognized trade association standards.
    3. Compliance with recognized testing agency standards.
    4. Application of testing agency labels and seals.
    5. Notation of dimensions verified by field measurement.
    6. Notation of coordination requirements.
C. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
D. Initial Submittal: Submit a single electronic copy, in .pdf format, of Product Data where selection of options is required.
E. Submittals: Submit a single electronic copy, in .pdf format, of each required submittal for Architect’s review; submit one printed copy at Project Closeout where required for maintenance manuals in project closeout manuals.
    1. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
F. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
    1. Do not proceed with installation until an applicable copy of Product Data is in the installer's possession.
    2. Do not permit use of unmarked copies of Product Data in connection with construction.

1.8 SAMPLES

A. Submit physical, full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern. Samples are for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
    1. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
    2. Refer to Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
B. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Place a permanent Label on each individual Sample for identification. The Label shall include the following:
    1 Provide a blank space approximately 4" x 5" on the label for Contractor’s and Architect’s recording action taken.

2. Generic description of the Sample.
3. Sample source.
4. Product name or name of manufacturer.
5. Compliance with recognized standards.

C. Initial submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
   1. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.

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

E. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
   1. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
   2. Sample sets may be used to obtain final acceptance of the construction associated with each set.

B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
   1. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
      a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.9 INFORMATIONAL SUBMITTALS

A. Collect, both hard copies and an electronic copy, in .pdf format, of Informational Submittals required by other Specification Sections.
   1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
   2. Test and Inspection Reports: Comply with requirements in Division 1 Section 01 40 00 - Quality Control Services.

B. Collect, both hard copies and an electronic copy, in .pdf format, of the following appropriate Informational Submittals:
   1. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
   2. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.
   3. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
   4. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
   5. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
   6. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.
   7. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
   8. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.

9. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
10. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements
11. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
12. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section 01 70 00 - Project Closeout.
13. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
    a. Preparation of substrates.
    b. Required substrate tolerances.
    c. Sequence of installation or erection.
    d. Required installation tolerances.
    e. Required adjustments.
    f. Recommendations for cleaning and protection.
14. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

1.10 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.
   1. Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken
   1. Final Unrestricted Release: Where submittals are marked "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance
   2. Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance
   3. Returned for Resubmittal: When submittal is marked "Not Approved, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
      a. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
   4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".

PART B. - PRODUCTS (Not Applicable).
PART C. - EXECUTION (Not Applicable).

SECTION 01 33 00
SUBMITTALS

END OF SECTION

SECTION 01 40 00
QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for quality control services.

B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.

1.3 RESPONSIBILITIES

A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.
   1. The Contractor shall employ and pay an independent agency, to perform specified quality control services.
   2. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
      a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
   3. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
      a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
      b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
      c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
      d. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
      e. Security and protection of samples and test equipment at the Project site.

B. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
   1. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
   3. The agency shall not perform any duties of the Contractor.

SECTION 01 40 00
QUALITY CONTROL SERVICES

1.4 SUBMITTALS

A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate.
   1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
   2. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
      a. Date of issue.
      b. Project title and number.
      c. Name, address and telephone number of testing agency.
      d. Dates and locations of samples and tests or inspections.
      e. Names of individuals making the inspection or test.
      f. Designation of the Work and test method.
      g. Identification of product and Specification Section.
      h. Complete inspection or test data.
      i. Test results and an interpretations of test results.
      j. Ambient conditions at the time of sample-taking and testing.
      k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
      l. Name and signature of laboratory inspector.
      m. Recommendations on retesting.

1.5 QUALITY ASSURANCE

A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
   1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for Section 01 35 13 - Cutting and Patching.

B. Protect construction exposed by or for quality control service activities, and protect repaired construction.

C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION

SECTION 01 42 19
REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.

C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Architect, requested by the Architect, and similar phrases.

D. Approved: The term approved, when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulations: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term furnish means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. Install: The term install describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. Provide: The term provide means to furnish and install, complete and ready for the intended use.

I. Installer: An Installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
   1. The term experienced, when used with the term Installer, means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
   2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to trades persons of the corresponding generic name.

J. Project site is the space available to the Contractor for performing construction activities either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests,

either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 48-Division format and MASTERFORMAT numbering system.

B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
   1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
      a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and other uncertainties to the Architect for a decision before proceeding.
   1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
   1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the Text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

SECTION 01 42 19
REFERENCE STANDARDS AND DEFINITIONS

1.5 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS (Not Applicable)
PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

B. Temporary utilities required include but are not limited to:
   1. Telephone and email service.
   2. Water, power and lighting required for construction.
      a. Contractor may use Owner's existing water and power. Exercise measures to conserve water.

C. Temporary construction and support facilities required include but are not limited to:
   1. Drinking water.
   2. De-watering facilities and drains.
   3. Waste disposal services.
   4. Construction aids and miscellaneous services and facilities.
   5. Temporary Project identification signs and bulletin boards.
   6. Field Offices and Storage Sheds.

D. Security and protection facilities required include but are not limited to:
   1. Barricades, warning signs, lights.
   2. Environmental protection.

E. Protection of installed work

1.3 SUBMITTALS

A. Temporary Utilities: Submit reports or tests, inspections, meter readings and similar procedures perfomed on temporary utilities.

B. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for the commencement of the Work.

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
   1. Building Code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, Fire Department and Rescue Squad rules.
   5. Environmental protection regulations.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Lumber and Plywood: Comply with requirements in Division-6 Section "Rough Carpentry."
   1. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.
   2. For fences and vision barriers, provide exterior type, minimum 3/8" thick plywood.
   3. For safety barriers, sidewalk bridges and similar uses, provide minimum 5/8" thick exterior plywood.

C. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

D. Water: Provide potable water approved by local health authorities.

E. Paint: Comply with requirements of Division-9 Section "Painting."
   1. For job-built temporary offices, shops, sheds, fences and other exposed lumber and plywood, provide exterior grade acrylic-latex emulsion over exterior primer.
   2. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.
   3. For interior walls of temporary offices, provide two coats interior latex flat wall paint.

2.2 EQUIPMENT

A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.

G. Restrooms: Contractor shall assume to provide own portable restroom facilities. May confirm use of adjacent building restrooms with owner.

H. First Aid Supplies: Comply with governing regulations.

I. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
   1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 DEWATERING FACILITIES

A. Provide earthen embankments and similar barriers in and around excavations and sub-grade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.
   1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or enclosed spaces.

C. Drinking Water Facilities: Provide containerized tap-dispenser bottled-water type drinking water units, including paper supply.

D. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
   1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
   2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
   3. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.

E. Temporary Lifts and Hoists; Provide facilities for hoisting materials and employees. Truck cranes and similar devices for hoisting materials are considered ”tools and equipment” and not temporary facilities.

F. Project Identification and Temporary Signs: Prepare project identification and other signs of the size indicated; install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative treated wood or steel. Do not permit installation of unauthorized signs.
   1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
   2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

G. Maintain the site, excavations and construction free of water.

H. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.

B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
   1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
   2. Store combustible materials in containers in fire-safe locations.
   3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
   4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

C. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.

D. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
   1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

E. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 PROTECTION OF INSTALLED WORK

A. Protect Installed Work and provide special protection where specified in individual sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.

C. Provide protective coverings at walls, projections, jambs, sills and soffits of openings.

D. **Protect new finished floors and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects by protecting with durable sheet materials.**

E. Prohibit traffic from landscaped areas.

3.6 PROTECTION OF EXISTING SURFACES

A. Prior to beginning any construction activities which might soil existing sidewalks, drives, floors, walls or other surfaces, Contractor shall erect durable, protective barriers to prevent damage or disfigurement of those surfaces, including protection of existing flooring with durable sheet materials.

3.7 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements. Protect water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of the Contractor.
   2. Remove temporary paving that is not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances which might impair growth of plant materials or lawns. Repair or replace street paving, curbs and sidewalks at the temporary entrances, as required by the governing authority.
   3. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:
      a. Replace air filters and clean inside of ductwork and housings.
      b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
      c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."

C. Standards: Refer to Section 01 42 19 - Reference Standards and Definitions for applicability of industry standards to products specified.

D. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section 01 25 13 - Product Substitutions.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well recognized meanings in the construction industry.
   1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
      a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
   2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
   3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 SUBMITTALS

A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
   1. Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.
      a. Related Specification Section number.
      b. Generic name used in Contract Documents.
      c. Proprietary name, model number and similar designations.
      d. Manufacturer's and name and address.
      e. Supplier's name and address.
      f. Installer's name and address.
      g. Projected delivery date, or time span of delivery period.
   2. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.

3. Completed Schedule: Within 60 days after date of commencement of the Work, submit 3 copies of the completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
4. Architect's Action: The Architect will respond in writing to the Contractor within 2 weeks of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include the following:
   a. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.5 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
   1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
   2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
      a. Name of product and manufacturer.
      b. Model and serial number.
      c. Capacity.
      d. Speed.
      e. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
   1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
   2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
   3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
   4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
   5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
   6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
   7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged

and, unless otherwise indicated, unused at the time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
   1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
   2. Semiproprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
      a. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
   3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
   4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
   5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.
      a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
   6. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
   7. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
      a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
   8. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.
   9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division-1 for allowances that control product selection, and for procedures required for processing such selections.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS:

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
   1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01 70 00
PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
   1. Inspection procedures.
   2. Project record document submittal.
   3. Operating and maintenance manual submittal.
   4. Submittal of warranties.
   5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions-2 through 13.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
   1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
      a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
   2. Advise Owner of pending insurance change-over requirements.
   3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
   4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
   1. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.
   2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
   1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
   2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
   3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.

4. Submit final meter readings for utilities and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.
6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.
1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
3. Note related Change Order numbers where applicable.
4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
5. Provide two hard copies of the marked Contract Drawings and Shop Drawings, and one electronic copy in .pdf format on compact disc.

C. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

D. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records. For all such miscellaneous record submittals, provide two hard copies and one electronic copy in .pdf format on compact disc.

E. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Provide one electronic copy in .pdf format on compact disc, and two hard copies as follows: Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Recommended "turn around" cycles.
6. Inspection procedures.

7. Shop Drawings and Product Data, including maintenance and cleaning requirements for products and finishes.
8. Fixture lamping schedule.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
   1. Maintenance manuals.
   2. Record documents.
   3. Spare parts and materials.
   4. Tools.
   5. Lubricants.
   6. Fuels.
   7. Identification systems.
   8. Control sequences.
   9. Hazards.
   10. Cleaning.
   11. Warranties.
   12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:
   1. Start-up.
   2. Shutdown.
   3. Emergency operations.
   4. Noise and vibration adjustments.
   5. Safety procedures.
   6. Economy and efficiency adjustments.
   7. Effective energy utilization.

3.2 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
   1. Complete the following cleaning operations.
      a. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

SECTION 01 70 00
PROJECT CLOSEOUT

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

SECTION 01 78 00
WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
   1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
   2. General closeout requirements are included in Section "Project Closeout."
   3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions-2 through -16.
   4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
   1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.4 SUBMITTALS

A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.

B. Form of Submittal: At Final Completion compile two hard copies and one electronic copy in .pdf format on CD (duplicating material provided in hard copy form) of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

C. Bind warranties in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
   1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
   2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES, the Project title or name, and the name of the Contractor.
   3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

D. Provide CD with binders.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 SCHEDULE OF WARRANTIES

A. **Provide warranties on products and installations as specified each individual Specification Section.**

END OF SECTION

SECTION 030516
UNDERSLAB VAPOR BARRIER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sheet vapor barrier under concrete slabs on grade.

1.02 RELATED REQUIREMENTS

A. Section 033000 - Cast-in-Place Concrete: Preparation of subgrade, granular fill, placement of concrete.

1.03 REFERENCE STANDARDS

A. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs 2018a.

B. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs 2017.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products.

C. Samples: Submit samples of underslab vapor barrier to be used.

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

PART 2 PRODUCTS

2.01 MATERIALS

A. Underslab Vapor Barrier:
   1. Water Vapor Permeance: Not more than 0.010 perms, maximum.
   2. Thickness: 15 mils.
   3. Basis of Design:
      a. Stego Industries LLC; Stego Wrap Vapor Barrier (15-mil): www.stegoindustries.com/#sle.
      b. Approved Equal.
      c. Substitutions: See Section 016000 - Product Requirements.

B. Accessory Products: Vapor barrier manufacturer's recommended tape, adhesive, mastic, etc., for sealing seams and penetrations in vapor barrier.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surface over which vapor barrier is to be installed is complete and ready before proceeding with installation of vapor barrier.

3.02 INSTALLATION

A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E1643.

B. Install vapor barrier under interior slabs on grade; lap sheet over footings and seal to foundation walls.

C. Lap joints minimum 6 inches.

D. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.

E. No penetration of vapor barrier is allowed except for reinforcing steel and permanent utilities.

F. Repair damaged vapor retarder before covering with other materials.

END OF SECTION

SECTION 03 33 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.
B. Cast-in-place concrete includes the following:
   1. Foundations and footings.
   2. Slabs-on-grade.
   3. Foundation walls.
   5. Equipment pads and bases.

C. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Section 31 00 10 - Earthwork and Grading.
   2. Section 31 31 16 - Termite Control.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others if requested by Architect.

C. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures. Include bolsters, chairs, spacers, etc. and any other devices for spacing, supporting and fastening reinforcement in place.

D. Laboratory test reports for concrete materials and mix design test.

E. Material certificates in lieu of material laboratory test reports when permitted by Architect. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
   1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."

2. ACI 318, "Building Code Requirements for Reinforced Concrete."

3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."

B. Concrete Testing Service: Engage a testing agency acceptable to Architect to perform material evaluation tests and to design concrete mixes.

C. Materials and installed work may require testing and retesting at any time during progress of Work. Tests, including retesting of rejected materials for installed Work, shall be done at Contractor's expense.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
1. ACI 301, "Specification for Structural Concrete".
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials".

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Form Release Agent: Provide commercial formulation form release agent with a maximum of 350 mg/l volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

D. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches to the plane of the exposed concrete surface.
1. Provide ties that, when removed, will leave holes not larger than 1 inch in diameter in the concrete surface.

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Welded Wire Fabric: ASTM A 1064, welded steel wire fabric.

C. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.
1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will

not support chair legs.
2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.
1. Use one brand of cement throughout Project unless otherwise acceptable to Architect.

B. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.
1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.

C. Water: Potable.

D. Admixtures, General: Provide concrete admixtures that contain not more than 0.1 percent chloride ions.

E. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Air-Tite, Cormix Construction Chemicals.
b. Air-Mix or Perma-Air, Euclid Chemical Co.
c. Darex AEA or Daravair, W.R. Grace & Co.
d. MB-VR or Micro-Air, Master Builders, Inc.
e. Sealtight AEA, W.R. Meadows, Inc.
f. Sika AER, Sika Corp.

2.4 RELATED MATERIALS

A. Reglets: Where sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 0.0217-inch-thick (26-gage) galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.

B. Dovetail Anchor Slots: Hot-dip galvanized sheet steel, not less than 0.0336 inch thick (22 gage) with bent tab anchors. Fill slot with temporary filler or cover face opening to prevent intrusion of concrete or debris.

C. Waterstops: Provide flat, dumbbell-type or centerbulb-type waterstops at construction joints and other joints as indicated. Size to suit joints.

D. Polyvinyl Chloride Waterstops: Corps of Engineers CRD-C 572.
1. Manufacturers: Subject to compliance with requirements, provide products of one of the following:
a. The Burke Co.
b. Greenstreak Plastic Products Co.
c. W.R. Meadows, Inc.
d. Progress Unlimited.
e. Schlegel Corp.

f. Vinylex Corp.

E. Vapor Retarder: Provide vapor retarder that is resistant to deterioration when tested according to ASTM E 154, as follows:
1. Polyethylene sheet not less than 15 mils thick.

F. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.

G. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.
1. Waterproof paper.
2. Polyethylene film.
3. Polyethylene-coated burlap.

H. Liquid Membrane-Forming Curing Compound: Liquid-type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.55 kg/sq. meter when applied at 200 sq. ft./gal., **certified by manufacturer to not interfere with bonding of floor covering when used on interior slabs.**
1. Provide material that has a maximum volatile organic compound (VOC) rating of 350 mg per liter.
2. Products: Subject to compliance with requirements, provide one of the following:
a. A-H 3 Way Sealer, Anti-Hydro Co., Inc.
b. Spartan-Cote, The Burke Co.
c. Conspec #1, Conspec Marketing & Mfg. Co.
d. Sealco 309, Cormix Construction Chemicals.
e. Day-Chem Cure and Seal, Dayton Superior Corp.
f. Eucocure, Euclid Chemical Co.
g. Horn Clear Seal, A.C. Horn, Inc.
h. L&M Cure R, L&M Construction Chemicals, Inc.
i. Masterkure, Master Builders, Inc.
j. CS-309, W.R. Meadows, Inc.
k. Seal N Kure, Metalcrete Industries.
l. Kure-N-Seal, Sonneborn-Chemrex.
m. Stontop CS2, Stonhard, Inc.

I. Water-Based Acrylic Membrane Curing Compound: ASTM C 309, Type I, Class B, **certified by manufacturer to not interfere with bonding of floor covering when used on interior slabs.**.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Highseal, Conspec Marketing and Mfg. Co.
b. Sealco - VOC, Cormix Construction Chemicals.
c. Safe Cure and Seal, Dayton Superior Corp.
d. Aqua-Cure, Euclid Chemical Co.
e. Dress & Seal WB, L&M Construction Chemicals, Inc.
f. Masterkure 100W, Master Builders, Inc.
g. Vocomp-20, W.R. Meadows, Inc.
h. Metcure, Metalcrete Industries.
i. Stontop CS1, Stonhard, Inc.

J. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss, **certified by manufacturer to not interfere with**

bonding of floor covering when used on interior slabs.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Aquafilm, Conspec Marketing and Mfg. Co.
   b. Eucobar, Euclid Chemical Co.
   c. E-Con, L&M Construction Chemicals, Inc.
   d. Confilm, Master Builders, Inc.
   e. Waterhold, Metalcrete Industries.

K. Bonding Agent: Polyvinyl acetate or acrylic base.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Polyvinyl Acetate (Interior Only):
         1) Superior Concrete Bonder, Dayton Superior Corp.
         2) Euco Weld, Euclid Chemical Co.
         3) Weld-Crete, Larsen Products Corp.
         4) Everweld, L&M Construction Chemicals, Inc.
         5) Herculox, Metalcrete Industries.
         6) Ready Bond, Symons Corp.
      b. Acrylic or Styrene Butadiene:
         1) Acrylic Bondcrete, The Burke Co.
         2) Strongbond, Conspec Marketing and Mfg. Co.
         3) Day-Chem Ad Bond, Dayton Superior Corp.
         4) SBR Latex, Euclid Chemical Co.
         5) Daraweld C, W.R. Grace & Co.
         6) Hornweld, A.C. Horn, Inc.
         7) Everbond, L&M Construction Chemicals, Inc.
         8) Acryl-Set, Master Builders Inc.
         9) Intralok, W.R. Meadows, Inc.
         10) Acrylpave, Metalcrete Industries.
         11) Sonocrete, Sonneborn-Chemrex.
         12) Stonlock LB2, Stonhard, Inc.
         13) Strong Bond, Symons Corp.

L. Epoxy Adhesive: ASTM C 881, two-component material suitable for use on dry or damp surfaces. Provide material type, grade, and class to suit Project requirements.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Burke Epoxy M.V., The Burke Co.
      b. Spec-Bond 100, Conspec Marketing and Mfg. Co.
      c. Resi-Bond (J-58), Dayton Superior.
      d. Euco Epoxy System #452 or #620, Euclid Chemical Co.
      e. Epoxtite Binder 2390, A.C. Horn, Inc.
      f. Epabond, L&M Construction Chemicals, Inc.
      g. Concresive Standard Liquid, Master Builders, Inc.
      h. Rezi-Weld 1000, W.R. Meadows, Inc.
      i. Metco Hi-Mod Epoxy, Metalcrete Industries.
      j. Sikadur 32 Hi-Mod, Sika Corp.
      k. Stonset LV5, Stonhard, Inc.
      l. R-600 Series, Symons Corp.

2.5 PROPORTIONING AND DESIGNING MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
   1. Do not use the same testing agency for field quality control testing.
   2. Limit use of fly ash to not exceed 20 percent of cement content by weight.
      a. Use of fly ash requires approval by architect during cold weather due to retardation of concrete setting.

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

C. Design mixes to provide normal weight concrete with the following properties as indicated on drawings and schedules:
   1. Refer to drawing sheet S0.0, CAST-IN-PLACE CONCRETE MIX DESIGN TABLE for mix design requirements.

D. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
   1. Subjected to freezing and thawing: Refer to drawing sheet S0.0, CAST-IN-PLACE CONCRETE MIX DESIGN TABLE for mix design requirements.

E. Slump Limits: Refer to drawing sheet S0.0, CAST-IN-PLACE CONCRETE MIX DESIGN TABLE for mix design requirements and slump limits for the following:
   1. Ramps, slabs, and sloping surfaces.
   2. Reinforced foundation systems.
   3. Other concrete.

F. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in Work.

2.6 ADMIXTURES

A. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:
   1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:
      a. 4.5 percent (moderate exposure); 5.5 percent (severe exposure) for 1-1/2-inch maximum aggregate.
   2. Other concrete not exposed to freezing, thawing, or hydraulic pressure, or to receive a surface hardener: 3 percent air.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.
   1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and

delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 FORMS

A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:
   1. Provide Class A tolerances for concrete surfaces exposed to view.
   2. Provide Class C tolerances for other concrete surfaces.

B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.

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

D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.

E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

A. General: Place vapor retarder/barrier sheeting in position with longest dimension parallel with direction of pour.

B. Lap joints 6 inches and seal with manufacturer's recommended mastic or pressure-sensitive tape.

3.4 PLACING REINFORCEMENT

A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.
   1. Avoiding cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.

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

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Architect.

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

E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure, as acceptable to Architect.

B. Provide keyways at least 1-1/2 inches deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.

C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.

D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's printed instructions.

F. Isolation Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
   1. Joint fillers and sealants are specified in Division 7 Section "Joint Sealants."

G. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8 inch wide by 1 ½", or inserts 1/4 inch wide by 1 ½", unless otherwise indicated.
   1. Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
   2. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
   3. If joint pattern is not shown, provide joints not exceeding 15 feet in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
   4. Joint fillers and sealants are specified in Division 7 Section "Joint Sealants."

3.6 INSTALLING EMBEDDED ITEMS

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

B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.

C. Install dovetail anchor slots in concrete structures as indicated on drawings.

D. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.7 PREPARING FORM SURFACES

A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.

B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.

3.8 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.

C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.

D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
   1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
   2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.

E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
   1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
   2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
   3. Maintain reinforcing in proper position on chairs during concrete placement.

F. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

G. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
   1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

H. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.
   1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
   3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
   4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Architect.

3.9 FINISHING FORMED SURFACES

A. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

B. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.
   1. Smooth Rubbed Funish: Wet concrete and rub with carborundum brick or other abrasive, snot more than 24 hours after form removal.

C. Grout-Cleaned Finish: Provide grout-cleaned finish on scheduled concrete surfaces that have received smooth-formed finish treatment.
   1. Combine one part portland cement to one and one-half parts fine sand by volume, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water to form the consistency of thick paint. Blend standard portland cement and white portland cement in amounts determined by trial patches so that final color of dry grout will match adjacent surfaces.
   2. Thoroughly wet concrete surfaces, apply grout to coat surfaces, and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

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

3.10 MONOLITHIC SLAB FINISHES

A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.
   1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

B. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.
   1. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 20 (floor flatness) and F(L) 17 (floor levelness) measured

according to ASTM E 1155. Grind smooth any surface defects that would telegraph through applied floor covering system.

C. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply a trowel finish as specified, then immediately follow by slightly scarifying the surface with a fine broom.

D. Nonslip Broom Finish: Apply a nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
   1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.12 CONCRETE CURING AND PROTECTION

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.

B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.

C. Curing Methods: Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified.

D. Provide moisture curing by the following methods:
   1. Keep concrete surface continuously wet by covering with water.
   2. Use continuous water-fog spray.
   3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a 4-inch lap over adjacent absorptive covers.

E. Provide moisture-retaining cover curing as follows:
   1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest

practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

F. Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:
   1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
   2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.

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

H. Curing Unformed Surfaces: Cure unformed surfaces, including slabs, floor topping, and other flat surfaces, by applying the appropriate curing method.
   1. Final cure concrete surfaces to receive finish flooring with a moisture-retaining cover, unless otherwise directed.

3.13 REMOVING FORMS

A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.

C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.14 REUSING FORMS

A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable to Architect.

3.15 CONCRETE SURFACE REPAIRS

SECTION 03 33 00
CAST-IN-PLACE CONCRETE

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to Architect.

B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing.
   1. Cut out honeycombs, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
   2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.
   1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.
   1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01 inch wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
   2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
   3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to Architect.
   4. Repair defective areas, except random cracks and single holes not exceeding 1 inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

E. Repair isolated random cracks and single holes 1 inch or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bonding agent has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

F. Perform structural repairs with prior approval of Architect for method and procedure, using specified epoxy adhesive and mortar.

G. Repair methods not specified above may be used, subject to acceptance of Architect.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. Sampling and testing for quality control during concrete placement may include the following, as directed by Architect.
   1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
      a. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
      b. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
      c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
      d. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
      e. Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yd. plus additional sets for each 50 cu. yd. more than the first 25 cu. yd. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
   2. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
   3. When total quantity of a given class of concrete is less than 50 cu. yd., Architect may waive strength testing if adequate evidence of satisfactory strength is provided.
   4. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
   5. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.

B. Test results will be reported in writing to Architect, Structural Engineer, ready-mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

C. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

D. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure,

as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION

SECTION 033511
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Application of clear, colorless, liquid concrete hardener and densifier.

C. Application of water based concrete enhancer.

1.02 RELATED SECTIONS

A. Section 03 00 00 - Cast-in-Place Concrete.

1.03 REFERENCES

A. ASTM C779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.

B. ASTM F609 - Standard Test Method for Using a Horizontal Pull Slip meter (HPS).

1.04 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Submit manufacturer's product data and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Store materials in a clean dry area in accordance with manufacturer's instructions.

C. Keep products from freezing.

D. Avoid direct contact with this product as it may cause mild to moderate irritation of the eyes and/or skin.

E. Protect materials during handling and application to prevent damage or contamination.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not apply concrete densifier and chemical hardener when concrete temperature is below 35ºF (2ºC) or above 135ºF (57ºC).

B. Do not apply to frozen concrete.

C. Do not use on highly dense or non-porous surfaces.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. W.R. Meadows, Inc., PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976. (847) 683-4500. Fax (847) 683-4544. Web Site www.wrmeadows.com.

2.02 MATERIALS

A. Concrete Densifier and Chemical Hardener Compound shall be a ready to use, water-base colorless liquid formulated with chemically reactive raw materials that meets the maximum VOC content limits of 400 g/L for Concrete Protective Coatings as required by the U.S. EPA Architectural Coatings Rule.
   1. LIQUI-HARD as manufactured by W.R. MEADOWS.
   2. Approved Equal

B. Concrete Enhancer shall be a ready to use water-based, synthetic polymer concrete floor enhancer containing a proprietary stain blocking additive that meets the maximum VOC content limits of 100 g/L for sealers as required by California Air Pollution Control Districts as well as the 400 g/L VOC maximum required by the U.S. EPA Architectural Coatings Rule.
   1. BELLATRIX as manufactured by W.R. MEADOWS.
   2. Approved Equal

2.03 RELATED MATERIALS

A. Water: Potable water.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive concrete densifier and chemical hardener. Notify architect if surfaces are not acceptable. Do not begin application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

A. Protect adjacent surfaces not designated to receive treatment.

B. Clean and prepare surfaces to receive treatment in accordance with manufacturer's instructions ensuring that all stains, oil, grease, form release agents, dust and dirt removed prior to application.

3.03 APPLICATION

A. Apply concrete densifier and chemical hardener in accordance with manufacturer's instructions.

3.04 ENSURE APPLICATION EQUIPMENT IS CLEAN AND FREE OF PREVIOUSLY USED MATERIALS.

A. Do not dilute concrete densifier and chemical hardener.

B. Fresh Concrete
   1. Apply concrete densifier and chemical hardener as soon as concrete is firm enough to work on after final troweling.
   2. Apply undiluted concrete densifier and chemical hardener at approximately 300 sq. ft./gal. (4.91 sq. m./L), using a low-pressure sprayer or by spreading evenly with a soft-bristled broom.
   3. Do not allow material to puddle on the surface.

C. Existing Concrete
   1. Saturate the surface with undiluted concrete densifier and chemical hardener by sprayer, squeegee or broom.
   2. Keep the surface wet with concrete densifier and chemical hardener for a minimum of 30 minutes. (A range of 30-60 minutes may be required depending on temperature and conditions.).
   3. Ensure areas are kept wet at all times with concrete densifier and chemical hardener.
   4. Once the surface begins to gel and become slippery, immediately spray the surface with a light water mist.
   5. Scrub the surface with a broom or mechanical scrubber to increase the penetration of the concrete densifier and chemical hardener.
   6. Continue to work the concrete densifier and chemical hardener into the surface for another 5-10 minutes or until it becomes gelled and slippery for a second time.
   7. Thoroughly flush the surface with water and agitate the surface with a broom to aid in removal of the excess concrete densifier and chemical hardener.
   8. Remove all excess material with a mop or squeegee.
   9. Thoroughly squeegee the surface dry.
   10. If there are slippery patches, this is an indication that there is still excess concrete densifier and chemical hardener present. These areas should be re-flushed and squeegeed again until the entire surface is dry.

3.05 CONCRETE ENHANCER

A. Allow 24 hours before proceeding with concrete enhancer application.

B. Spray concrete enhancer full strength from container using an industrial sprayer delivering 1/10th of a gallon per minute.

C. Pre-wet micro-fiber applicator with concrete enhancer prior to use.

D. Uniformly spread concrete enhancer with a micro-fiber applicator, ensuring that the product is not allowed to dry before spreading is complete. Special caution should be taken to not over apply. A monolithic, thin, even film is desired.

E. For optimum performance, apply a second coat at a 90° (right) angle to the first coat, after the first coat is thoroughly dry.

F. Allow 24 hours for concrete enhancer to dry.

3.06 PROTECTION

A. Keep surface dry for a minimum of 48 hours after application.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes fabrication and erection of structural steel work, as shown on drawings including schedules, notes, and details showing size and location of members, typical connections, and types of steel required.
   1. Structural steel is that work defined in American Institute of Steel Construction (AISC) "Code of Standard Practice" and as otherwise shown on drawings.
   2. Refer to Division 3 for anchor bolt installation in concrete.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
   1. Structural steel (each type), including certified copies of mill reports covering chemical and physical properties.
   2. High-strength bolts (each type), including nuts and washers.
      a. Include Direct Tension Indicators if used.
   3. Structural steel primer paint.
   4. Shrinkage-resistant grout.

C. Shop drawings prepared under supervision of a licensed Structural Engineer, including complete details and schedules for fabrication and assembly of structural steel members, procedures, and diagrams. Reproduction of contract drawings will not be permitted.
   1. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols and show size, length, and type of each weld.
   2. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed as work of other sections.
   3. Submit one reproducible and one print.

D. Test reports conducted on shop- and field-bolted and welded connections. Include data on type(s) of tests conducted and test results.

E. Certified copies of each survey conducted by a licensed Land Surveyor, showing elevations and locations of base plates and anchor bolts to receive structural steel and final elevations and locations for major members. Indicate discrepancies between actual installation and contract documents.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following, except as otherwise indicated:
   1. American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges."
      a. Paragraph 4.2.1 of the above code is hereby modified by deletion of the following sentence:
         1) "This approval constitutes the owner's acceptance of all responsibility for the design adequacy of any detail configuration of connections developed by the fabricator as a part of his preparation of these shop drawings."
   2. AISC "Specifications for Structural Steel Buildings," including "Commentary."
   3. "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" approved by the Research Council on

SECTION 05 12 00
STRUCTURAL STEEL

Structural Connections.
4. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel."
5. ASTM A 6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use."

B. Qualifications for Welding Work: Qualify welding procedures and welding operators in accordance with AWS "Qualification" requirements.
1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.
2. If recertification of welders is required, retesting will be Contractor's responsibility.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site at such intervals to ensure uninterrupted progress of work.

B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not to delay work.

C. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration. If bolts and nuts become dry or rusty, clean and relubricate before use.
1. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Metal Surfaces, General: For fabrication of work that will be exposed to view, use only materials that are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating, and applying surface finishes.

B. Wide Flange (W), Tee (WT) Shapes: ASTM A992, FY= 50 KSI; Plate and Bars: ASTM A36.

C. Cold-Formed Steel: Per Structural General Notes.

D. Steel Pipe: ASTM A 501, Fy = 36 KSI.
1. Finish: Black, except where indicated to be galvanized.

E. Steel Castings: ASTM A 27, Grade 65-35, medium-strength carbon steel.

F. Welded Headed (shear) Stud Anchors: ASTM A108 - Nelson/TRW S3L.
Welded Headed Stud (WHS) Anchors: ASTM A108 - Nelson/TRW H4L.

G. Anchor Bolts: ASTM F1554, Gr. 36, nonheaded type unless otherwise indicated.

H. Refer to Structural General Notes for other steel shapes.

I. Electrodes for Welding: Comply with AWS Code.

J. Structural Steel Primer Paint: SSPC - Paint 1; red lead and oil.
K. Structural Steel Primer Paint: Fabricator's standard rust- inhibiting primer.

L. Nonmetallic Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining product containing

selected silica sands, Portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with CE-CRD-C621.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Sure Grip Grout; Dayton Superior.
   b. Euco N.S.; Euclid Chemical Co.
   c. Masterflow 713; Master Builders.
   d. Five Star Grout; U.S. Grout Corp.

2.2 FABRICATION

A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members where indicated.
   1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.
   2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.

B. Connections: Weld or bolt shop connections, as indicated.

C. Bolt field connections, except where welded connections or other connections are indicated.
   1. Provide high-strength threaded fasteners for principal bolted connections, except where unfinished bolts are indicated.
   2. Provide unfinished threaded fasteners for only bolted connections of secondary framing members to primary members (including purlins, girts, and other framing members taking only nominal stresses) and for temporary bracing to facilitate erection.

D. High-Strength Bolted Construction: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts."

E. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.

F. Assemble and weld built-up sections by methods that will produce true alignment of axes without warp.

G. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld shear connectors in field, spaced as shown, to beams and girders in composite construction. Use automatic end welding of headed stud shear connectors in accordance with manufacturer's printed instructions.

H. Steel Wall Framing: Select members that are true and straight for fabrication of steel wall framing. Straighten as required to provide uniform, square, and true members in completed wall framing.

I. Build up welded door frames attached to structural steel framing. Weld exposed joints continuously and grind smooth. Plug-weld steel bar stops to frames, except where shown removable. Secure removable stops to frames with countersunk, cross-recessed head machine screws, uniformly spaced not more than 10 inches o.c., unless otherwise indicated.

J. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings.

K. Provide threaded nuts welded to framing and other specialty items as indicated to receive other work.

L. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning. Drill holes in bearing plates.

M. Expansion Joints: Provide expansion joints in steel shelf angles when part of structural steel frame; locate at vertical brick expansion joints as indicated on drawings.

2.3 SHOP PAINTING

A. General: Shop-paint structural steel, except those members or portions of members to be embedded in concrete or mortar. Paint embedded steel that is partially exposed on exposed portions and initial 2 inches of embedded areas only.
1. Do not paint surfaces to be welded or high-strength bolted with friction-type connections.
2. ***Do not prime or paint surfaces scheduled to receive sprayed-on fireproofing.***
3. Apply 2 coats of paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

B. Surface Preparation: After inspection and before shipping, clean steelwork to be painted. Remove loose rust, loose mill scale, and spatter, slag, or flux deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC) as follows:
1. SP-1 "Solvent Cleaning."
2. SP-2 "Hand-Tool Cleaning."
3. SP-3 "Power-Tool Cleaning."
4. SP-7 "Brush-Off Blast Cleaning."

C. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide dry film thickness of not less than 1.5 mils. Use painting methods that result in full coverage of joints, corners, edges, and exposed surfaces.

D. Painting: Provide a one-coat, shop-applied paint system complying with Steel Structures Painting Council (SSPC) Paint System Guide No. 7.00.

2.4 SOURCE QUALITY CONTROL

A. General: Materials and fabrication procedures are subject to inspection and tests in mill, shop, and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
1. Promptly remove and replace materials or fabricated components that do not comply.

B. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at site whenever possible without causing delay in the work.
1. Promptly notify Architect whenever design of members and connections for any portion of structure are not clearly indicated.

PART 3 - EXECUTION

3.1 ERECTION

A. Surveys: Employ a licensed land surveyor for accurate erection of structural steel. Check elevations of concrete and masonry bearing surfaces, and locations of anchor bolts and similar devices, before erection work proceeds, and report discrepancies to Architect. Do not proceed with erection until corrections have been made or until compensating adjustments to structural steel work have been agreed upon with Architect.

B. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are

in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.

C. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete work.

D. Setting Bases and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates.
   1. Set loose and attached base plates and bearing plates for structural members on wedges or other adjusting devices.
   2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.
   3. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure.
   4. For proprietary grout materials, comply with manufacturer's instructions.

E. Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

F. Level and plumb individual members of structure within specified AISC tolerances.

G. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.

H. Splice members only where indicated and accepted on shop drawings.

I. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds, and grind smooth at exposed surfaces.
   1. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
   2. Do not enlarge unfair holes in members by burning or by using drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.

J. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members that are not under stress, as acceptable to Architect. Finish gas-cut sections equal to a sheared appearance when permitted.

K. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas using same material as used for shop painting.
   1. Apply by brush or spray to provide minimum dry film thickness of 1.5 mils.

3.2 QUALITY CONTROL

A. Contractor will engage an independent testing and inspection agency to inspect high-strength bolted connections and welded connections and to perform tests and prepare test reports. Include final test report in Closeout Documents.

B. Testing agency shall conduct and interpret tests, state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom.

C. Provide access for testing agency to places where structural steel work is being fabricated or produced so that

required inspection and testing can be accomplished.

D. Testing agency may inspect structural steel at plant before shipment.

E. Correct deficiencies in structural steel work that inspections and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as necessary to reconfirm any noncompliance of original work and to show compliance of corrected work.

F. Shop-Bolted Connections: Inspect or test in accordance with AISC specifications per Structural Drawings.

G. Shop Welding: Inspect or test in accordance with AISC specifications per Structural Drawings.

H. Field-Bolted Connections: Inspect or test in accordance with AISC specifications per Structural Drawings.

I. Field Welding: Inspect or test in accordance with AISC specifications per Structural Drawings.

END OF SECTION

SECTION 061000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Nonstructural dimension lumber framing.

C. Rough opening framing for doors, windows, and roof openings.

D. Subflooring.

E. Miscellaneous framing and sheathing.

F. Communications and electrical room mounting boards.

G. Concealed wood blocking, nailers, and supports.

1.02 RELATED REQUIREMENTS

A. Section 033000 - Cast-in-Place Concrete: Setting anchors in concrete.

B. Section 051200 - Structural Steel Framing: Prefabricated beams and columns for support of wood framing.

C. Section 092116 - Gypsum Board Assemblies: Gypsum-based sheathing.

D. Section 313116 - Termite Control: Field-applied termiticide and mildewcide for wood materials.

1.03 REFERENCE STANDARDS

A. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing 2003 (Reapproved 2017).

B. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.

C. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2021.

D. AWPA U1 - Use Category System: User Specification for Treated Wood 2022.

E. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. ICC (IECC) - International Energy Conservation Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. PS 20 - American Softwood Lumber Standard 2021.

H. SPIB (GR) - Standard Grading Rules 2021.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.

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.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.

2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

END OF SECTION

SECTION 07 90 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants for the following locations:
   1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below:
      a. Perimeter joints between materials listed above and frames of doors and windows.
      b. Control and expansion joints in ceiling and overhead surfaces.
      c. Other joints as indicated.
   2. Exterior joints in horizontal traffic surfaces as indicated below:
      a. Control or expansion joints in Portland Cement Concrete Paving.
      b. Control, expansion, and isolation joints in cast-in-place concrete slabs.
      c. Other joints as indicated.
   3. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:
      a. Perimeter joints of exterior openings where indicated.
      b. Perimeter joints between interior wall surfaces and frames of interior doors, and windows.
      c. Perimeter joints of toilet fixtures.
      d. Other joints as indicated.
   4. Interior joints in horizontal traffic surfaces as indicated below:
      a. Control and expansion joints in cast-in-place concrete slabs.
      b. Other joints as indicated.
   5. Interior and exterior pre-engineered metal building wall and roof joints.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Section 13 34 19 - Pre-Engineered Metal Building: Sealant joints in Pre-Engineered Metal Building.

1.3 QUALITY ASSURANCE: Obtain elastomeric materials only from manufacturer who will, if required, send a qualified technical representative to project site, for the purpose of advising the Installer of proper procedures and precautions for the use of the material.

1.4 SUBMITTALS: Comply with Section 01 33 00.

A. Product Data: Submit manufacturer's specifications, recommendations, and installation instructions for each type of sealant, calking compound and miscellaneous materials. Include letter of certification, or certified test laboratory reports indicating that each material complies with the requirements and is intended for the applications indicated.

B. Samples: Submit 12" long sample of each color required (except black) for each type of sealant or calking compound exposed to view. Samples will be viewed for color only.

1.5 JOB CONDITIONS:

A. Examine joint surfaces, backing, and anchorage of units forming sealant rabbet. Do not proceed with work until unsatisfactory conditions have been corrected.

SECTION 07 90 00
JOINT SEALANTS

B. Do not proceed with installations of sealants under adverse weather conditions, or when temperatures are above or below manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength.

1.6 WARRANTY: Execute and furnish to Owner on final completion of project, a warranty, agreeing that for a period of two years the Contractor will at his own expense make repairs and correct defects that may be become necessary to maintain joint sealant work in watertight condition.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.

B. Provide in colors as selected by the Architect from manufacturer's standard colors.

2.2 ELASTOMERIC JOINT SEALANTS: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated with complies with ASTM C 920 requirements, including those for Type, Grade Class, and Uses.

A. Two-Or-More Component Nonsag Urethane Sealant: Type M, Grade NS, Class 25. Tremco "Dymeric", Sonneborn "NP-2", Bostik "Chem-Calk 500", or Pecora "Dynatrol II".

B. Two-Component Pourable Urethane Sealant: Type M, Grade P, Class 25. Tremco "THC 900", Sonneborn "Sonolastic Paving Joint Sealant", Bostik "Chem-Calk 550", or Pecora "NR-200 Urexpan".

C. One-Component Mildew-Resistant Silicone Sealant (Pre-Engineered Metal Building): Type S, Grade NS, Class 25. GE "SCS 1702", Dow Corning "786", Tremco "Proglaze White", or Pecora "863 #345".

2.3 ACRYLIC EMULSION SEALANT: One component, nonsag, acrylic, paintable, mildew-resistant, complying with ASTM C 834. Tremco "Acrylic Latex Caulk", Sonneborn "Sonolac", Pecora Corp. "AC-20", or Bostik "Chem-Calk 600".

2.4 MISCELLANEOUS MATERIALS:

A. Joint Cleaner: Type of joint cleaning compound recommended by the sealant or calking compound manufacturer for the joint surfaces to be cleaned.

B. Joint Primer/Sealer: Type recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.

C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.

D. Sealant Backer Rod: Compressible rod stock open cell polyurethane foam. Provide size and shape of rod which will control the joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize the possibility of sealant extrusion when joint is compressed.

PART 3 - EXECUTION

3.1 JOINT TYPES AND USAGES: Calking and sealant usage is specified below.

A. Acrylic Sealant: All interior joints except joints with metal, aluminum, ceramic tile, and wet work.

B. Elastomeric Sealants: Use non-sag polyurethane at exterior joints and interior joints with aluminum and metal. Use mildew resistant silicone sealant at ceramic tile, sinks, and plumbing fixtures. Use minimum Shore A hardness urethane sealant for horizontal joints subject to pedestrian and vehicular traffic.

3.2 JOINT SURFACE PREPARATION:

A. Clean joint surfaces immediately before installation of sealant. Remove dirt, insecure coatings, moisture, and other substances which would interfere with bond of sealant.

B. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating. Remove coating or treatment from joint surfaces before installing sealant.

C. Etch concrete and masonry joint surfaces to remove excess alkalinity. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.

D. Roughen joint surfaces on vitreous coated and similar non-porous materials, wherever sealant manufacturer's data indicates lower bond strength than for porous surfaces. Rub with fine abrasive cloth or wool to produce a dull sheen.

3.3 INSTALLATION:

A. Comply with sealant manufacturer's printed instructions, except where more stringent requirements are indicated or specified and except where manufacturer's technical representative directs otherwise.

B. Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

C. Install sealant backer rod for liquid elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.

D. Install bond breaker tape wherever shown and wherever required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

E. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without

gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

F. Install sealants to depths as shown or, if not shown, as recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead.

For sidewalks and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75% of joint width, but neither more than 5/8" deep nor less than 3/8" deep. For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2" deep nor less than 1/4" deep.

For joints sealed with non-elastomeric sealants, fill joints to a depth in the range of 75% to 125% of joint width.

G. Do not allow sealants to overflow or spill onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either the primer/sealer or the sealant.

H. Remove excess and spillage of sealant promptly as work progresses. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage, without damage to adjoining surfaces of finishes.

3.4 CURE AND PROTECTION: Cure sealants in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength, and surface durability. Cure and protect sealants in a manner which will minimize increases in modeless of elasticity and other accelerated aging effects. Replace or restore sealants which are damaged or deteriorated during construction period.

END OF SECTION

SECTION 08 11 16
HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following products manufactured in accordance with SDI Recommended Standards:
   1. Doors: Flush, hollow or composite construction standard steel doors for interior and exterior locations.
   2. Frames: Pressed steel frames for doors, transoms, sidelights, mullions, interior glazed panels, and other interior and exterior openings of following type:
      a. Welded unit type.
   3. Assemblies: Provide standard steel door and frame assemblies as required for the following:
      a. Labeled and fire rated.
   4. Provide factory primed doors and frames to be field painted.

B. Painting primed doors and frames is specified in Division 9 Section "Painting."

C. Door hardware is specified in another Division 8 Section.

D. Glass and Glazing are specified in another Division 8 Section.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.

C. Shop drawings showing fabrication and installation of standard steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
   1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.
   2. Indicate coordinate of glazing frames and stops with glass and glazing requirements.

D. Samples for verification purposes of each type of exposed finish required, prepared on samples not less than 3 inches by 5 inches and of same thickness and material indicated for final unit of Work. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected.

E. Label Construction Certification: For door assemblies required to be fire-rated and exceeding limitations of labeled assemblies, submit manufacturer's certification that each door and frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

1.4 QUALITY ASSURANCE

A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications Standard Steel Doors and Frames" ANSI/SDI-100 and as herein specified.

B. Fire-Rated Door Assemblies: Units that comply with NFPA 80, are identical to door and frame assemblies whose

fire resistance characteristics have been determined per ASTM E 152 and which are labeled and listed by UL, Factory Mutual, Warnock Hersey, or other testing and inspecting organization acceptable to authorities having jurisdiction.

1. Temperature Rise Rating: At stairwell enclosures, provide doors which have Temperature Rise Rating of 450 deg F (232 deg C) maximum in 30 minutes of fire exposure (not required in buildings equipped throughout with NFPA 13 or NFPA 13R fire sprinkler systems).

C. Thermal Door: Door scheduled for use in exterior walls shall be manufactured with a core that will provide a minimum U-Factor of 0.35. (Arkansas Energy Code).

D. Reinforcement: Provide adequate concealed door and frame reinforcement as may be required by the hardware schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.

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

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

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering standard steel doors and frames which may be incorporated in the work include; but are not limited to, the following:

1. Standard Steel Doors and Frames:
   a. Amweld Building Products, Inc.
   b. Ceco Corp.
   c. Copco Door Co.
   d. Curries Company.
   e. Deansteel Manufacturing Co.
   f. Fenestra Corp.
   g. Kewanee Corp.
   h. Mesker Door Co.
   i. Pioneer Industries.
   j. Premier Products, Inc. (Formerly Dittco).
   k. Republic Builders Products.
   l. Steelcraft Manufacturing Co.

2.2 MATERIALS

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

B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.

C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, or drawing quality, ASTM A 642, hot dipped galvanized in accordance with ASTM A 525, with A60 or G60 coating designation, mill phosphatized.

D. Supports and Anchors: Fabricate of not less than 18-gage sheet steel; galvanized where used with galvanized frames.

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

F. Shop Applied Paint: Apply after fabrication.
   1. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints complying with ANSI A224.1, "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames."

2.3 DOORS

A. Provide metal doors of SDI grades and models specified below or as indicated on drawings or schedules:
   1. Interior Doors: ANSI/SDI-100, Grade II, heavy-duty, Model 3 or 4, minimum 18-gage cold-rolled sheet steel faces.
   2. Exterior Doors: ANSI/SDI-100, Grade III, extra heavy-duty, Model 4, minimum 16-gage galvanized steel faces.

2.4 FRAMES

A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 18-gage cold-rolled steel.
   1. Fabricate frames with mitered, coped, or welded corners.
   2. Form exterior frames from 16-gage galvanized teel.

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

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

2.5 FABRICATION

A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory- assembled before shipment, to assure proper assembly at project site. Comply with ANSI/SDI-100 requirements.
   1. Internal Construction: Manufacturer's standard honeycomb, polyurethane, polystyrene, unitized steel grid, vertical steel stiffeners, or rigid mineral fiber core with internal sound deadener on inside of face sheets where appropriate in accordance with SDI standards.
   2. Clearances: Not more than 1/8 inch at jambs and heads except between non-fire-rated pairs of doors not more than 1/4 inch. Not more than 3/4 inch at bottom.

B. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel.

C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel.

E. Fabricate exterior doors, panels, and frames from galvanized sheet steel in accordance with SDI-112. Close top and bottom edges of exterior doors as integral part of door construction or by addition of minimum 16-gage inverted steel channels.

F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and

bolts.

G. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal insulating door and frame assemblies and tested in accordance with ASTM C 236 or ASTM C 976 on fully operable door assemblies.
   1. Unless otherwise indicated, provide thermal-rated assemblies with U factor of 0.41 Btu/(hr x sq ft x deg F.) or better.

H. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware in accordance with final Door Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 Series Specifications for door and frame preparation for hardware.
   1. For concealed overhead door closers, provide space, cutouts, reinforcing and provisions for fastening in top rail of doors or head of frames, as applicable.

I. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at project site.

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

K. Shop Painting: Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
   1. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
   2. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

L. Glazing Stops: Minimum 20 gage steel or .040-inch-thick aluminum.
   1. Provide non-removable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
   2. Provide screw applied removable glazing beads on inside of glass, louvers, and other panels in doors.

PART 3 - EXECUTION

3.1 INSTALLATION

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

B. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions For Steel Frames," unless otherwise indicated.
   1. Except for frames located at existing concrete, masonry or drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
   2. In masonry construction, locate 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry Tee anchors.
   3. Install fire-rated frames in accordance with NFPA Standard No. 80.
   4. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In closed steel stud partitions, attach wall anchors to studs with screws.
   5. In in-place drywall partitions install knock down slip-on drywall frames

C. Door Installation: Fit hollow metal doors accurately in frames, within clearances specified in ANSI/SDI-100.
   1. Install fire-rated doors with clearances as specified in NFPA Standard No. 80.

3.2 ADJUST AND CLEAN

A. Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

B. Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from prefinished doors.

C. Final Adjustments: Check and readjust operating hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION

SECTION 08 36 13
INSULATED SECTIONAL OVERHEAD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes manual sectional overhead doors, operating hardware, supports and controls.

B. Types of sectional overhead doors include the following:
   1. Insulated Service Doors.

C. Operation of overhead coiling doors include the following:
   1. Manual operation.

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

1.3 RELATED SECTIONS

A. Section 07 90 00 - Joint Sealants: Perimeter sealant and backup materials.

B. Section 09 90 00 - Painting: Field Painting.

C. Section 13 34 19 - Pre-Engineered Metal Building: Steel frame for door opening.

1.4 REFERENCES

A. ANSI/DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors.

1.5 SYSTEM DESCRIPTION

A. Panels: Stile and rail steel.

B. Operation: Manual.

C. Design and size components to withstand dead and live loads caused by pressure and suction of wind acting normal to plane of wall as calculated with applicable code to a design pressure of 20 lbs/sq ft as measured in accordance with ANSI/ASTM E330.

1.6 SUBMITTALS

A. Product data, roughing-in diagrams, and installation instructions for each type and size of overhead sectional door.

B. Shop Drawings: Indicate opening dimensions and required tolerances, component construction, connection details, anchorage methods and spacing, hardware and locations, and installation details.

SECTION 08 36 13
INSULATED SECTIONAL OVERHEAD DOORS

C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and finishing instructions.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Operation and Maintenance Data: Submit data, control adjustments, and spare part sources.

1.7 QUALIFICATIONS

A. Installer: Company specializing in performing the work of this section and approved by the manufacturer.

1.8 WARRANTY

A. Provide one year warranty.

1.9 DELIVERY, STORAGE AND HANDLING

A. Store products in manufacturer's unopened labeled packaging until ready for installation.

B. Protect materials from exposure to moisture until ready for installation.

C. Store materials in a dry, ventilated weathertight location.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Door Link Manufacturing, Inc., or approved equal.

2.2 SECTIONAL STEEL OVERHEAD DOORS

A. Insulated Sectional Overhead Steel Doors: 6500 Series Insulated Steel Doors by Door Link Manufacturing, Inc., or approved equal. Sizes as indicated in Drawings. Units shall have the following characteristics:
   1. Door Assembly: Seel door assembly with rabbeted meeting rails to form weathertight joints and provide full-width interlocking structural rigidity.
      a. Panel Thickness: 2 inches.
      b. Exterior Surface: Pebble embossed.
      c. Exterior Steel: 24 gauge, hot-dip galvanized.
      d. Back Cover: 26 gauge steel.
      e. End Caps: 20 gauge hot dipped steel hinge plates.
      f. Springs: 10,000 cycles.
      g. Insulation: Polystyrene.
      h. Thermal Values: Polystyrene - R value of 10.25.
      i. Glazing: None.
      j. Track: Vertical Lift to maximum extent (field verify track requirements)
   2. Finish and color: 1.0 mil paint system to include .25 mil rust inhibiting primer and.75 mil top coat,

white exterior and interior color. Field paint as specified in Section 09 90 00 - Painting.

3. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
4. Lock: Interior mounted slide lock.
5. Weatherstripping:
   a. Flexible bulb-type strip at bottom section.
   b. Flexible Jamb seals.
   c. Flexible Header seal.
6. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
9. Manual Operation: Chain hoist. A maximum force of 25 lbs. shall be sufficient to operate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

B. Beginning of installation means acceptance of existing surfaces.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare opening components to permit installation of door unit and preserve continuity of wall air barrier and vapor retarder seal.

3.3 INSTALLATION

A. Install overhead doors and track in accordance with the manufacturer’s printed instructions.

B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

C. Anchor assembly to wall construction and building framing without distortion or stress.

D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

E. Fit and align door assembly including hardware.

3.4 CLEANING AND ADJUSTING

A. Adjust door assembly to smooth operation and in full contact with weatherstripping.

B. Clean doors and frames.

C. Remove temporary labels and visible markings.

3.5 PROTECTION

A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

B. Protect installed products until completion of project.

C. Touch-up damaged coating and finishes and repair minor damage before Substantial Completion.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 CONDITIONS

A. The General and Supplementary Conditions and All Contract Documents are a part of this division of the specifications and all provisions contained herein, submission of proposal implies that the bidder is fully familiar with all requirements of said documents.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to the following:

1. Mechanical door hardware.
2. The finish hardware supplier shall furnish all necessary items for completion of this project, as specified in paragraph 3.5, Hardware Sets, or as necessary to complete this building excepting the items specifically excluded.

C. Hardware provided in other sections:

A. Window Hardware.
B. Cabinet and Millwork Hardware.
C. Sliding Automatic Entrances
D. Automatic Door Operators.
E. Hinges, thresholds and weatherstripping for pre-hung fiberglass doors.

1.3 RELATED SECTIONS

A. Section 08 11 16 - Hollow Metal Doors and Frames

B. Section 08 14 29 - Pre-Finished Interior Flush Wood Doors

1.4 SUBMITTALS

A. Shop Drawings.

1. Prior to ordering hardware, supplier shall submit five (5) copies of the hardware schedule as follows in typed and digital format:
   a. Arrange doors in hardware groups of like doors.
   b. Provide a door index showing the door number and hardware heading the door is under.
   c. Indicate the manufacturer, the finish, size and any other pertinent information.
   d. Horizontal hardware schedules will not be accepted. Only vertical hardware schedules will be reviewed for approval.
2. Furnish three (3) copies of catalog pages describing each item listed.

3. Prepare separate keying schedule for the architect's approval prior to fabrication.

4. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring.

Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.

5. Electrical Coordination: Coordinate with related Division 16 Electrical Sections the voltages and wiring details required at electrically controlled and operated hardware openings.

B. Templates.
1. Furnish to metal, aluminum and wood door manufacturer complete template information illustrating special preparations and location required for all hardware.

C. Operating and Maintenance Manuals: Provide manufacturer's operating and maintenance manuals for each item comprising the door hardware installation in quantitiy as required in Section 01700 - Project Closeout. The manual to include the name, address, and contact information of the manifacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

1.5 QUALITY ASSURANCE

A. All hardware items shall be furnished by factory authorized dealer. Dealer shall provide written proof of factory authorization to architect for review along with factory authorization for dealer to provide warranty service for all hardware components.

B. The hardware supplier shall submit electronically one (1) typewritten hardware schedule to the architect through the general contractor for approval. Each schedule shall contain the door index listing or opening on the project and the hardware for said opening. Each item of hardware listed is to be clearly identified by manufacturer, manufacturer's number and finish.

C. The architect retains the authority to approve or reject any schedule based upon his knowledge of the suppliers experience and capabilities, the general quality of the products submitted and compliance with the specifications.

D. If requested the supplier shall provide working samples of any items he proposes to substitute. Samples will be returned to the jobsite for installation.

E. The hardware supplier shall forward template information to all related trades within ten (10) days after receipt of approved hardware schedule. Template submission shall be made in accordance with the latest standards as published by the door and hardware institute.

F. The supplier shall forward wiring diagrams to all affected trades within ten (10) days after receipt of approved hardware schedule.

G. Rated doors, frames and all hardware must meet the requirements of NFIPA 80 (AFPC V2 703.4.1).

H. All hardware to meet the requirements of the latest version of the American with Disabilities Act Accessibility Guidelines.

I. Source Limitations: Obtain each type and variety of Door Hardware specified in this Section from a single source, qualified supplier unless otherwise indicated.
1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door

hardware, unless otherwise indicated.

J. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the Arkansas Fire Prevention Code including, but not limited to the following: NFPA 70 “National Electrical Code”, including electrical componenets, devices, and accessories and listed and labeled as defined in Article 100 by a testing agency acceptable to Authorities Having Jurisdiction, and marked for intended use.

1.6 DELIVERY, STORAGE AND HANDLING

A. All items of hardware shall be clearly marked with door number key symbol, and heading number to correspond with the approved hardware schedule.

B. The general contractor will be responsible for providing a dry, clean, locked room of adequate size for storage of hardware.

1.7 ADJUSTMENT

A. After installation make adjustments as necessary to insure proper operation of all hardware items.

B. In accordance with the Americans with Disabilities Act (ADA), adjust all door hardware so that the maximum force required for pushing or pulling open a door shall be as follows:
1. Fire doors shall have the minimum opening force allowable by the appropriate administrative authority.
2. Exterior Hinged Doors: 8.5 LBF (SBS)
3. Interior Hinged Doors: 5.0 LBF (22.2N)
4. Sliding or Folding Doors: 5.0 LBF

These forces do not apply to the force required to retract latch bolts or disengage other devices that may hold the door in a closed position.

1.8 GUARANTEE

A. The hardware supplier shall guarantee that all materials furnished under this division will be free from defects and blemishes for a period of one (1) year from date of acceptance. The supplier shall repair or replace at his expense including labor, when instructed to do so by the architect and/or owner any item of finish hardware which may prove to be defective within said period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Product numbers listed in the following specifications are taken from the catalogs of manufacturers listed as follows:

Corbin Russwin
McKinney
Pemko
Rockwood Manufacturing

B. Items of hardware shall be as described herein and as indicated in the hardware sets.

2.2 BUTTS

A. Butt hinges are to be the types and weights indicated, sizes are to be in accordance with the following:

Width	
1-3/4" Thick Doors	4-1/2"
1-3/8" Thick Doors	3-1/2"
Height	
Doors up to 42" Wide	4-1/2"
Doors 42" Wide And Over	5"

Exterior, out swinging doors are to have non-removable pins (NRP).

B. The number of hinges per door is to be in accordance with the following:

Door Height	Number of Hinges
To 5'-0"	2
5'-0" to 7'-6"	3
7'-6" to 10'	4

C. Products of the following manufacturers will be considered acceptable provided they are equivalent weight, function and design.
MCKINNEY STANLEY BOMMER

2.3 LOCKSETS

A. CORBIN RUSSWIN CL 3800 Standard Duty Cylindrical Locksets conforming to ANSI BHMA series Grade 2. All locks are to be UL approved for fire doors whether specifically used on fire doors or not. Latch bolts are to have full ½" throw of the mechanical anti-friction type.

B. Furnish wrought boxes for all locks used in conjunction with aluminum frames, wood frames and pairs of doors.

C. Cylinders: CORBIN RUSSWIN, IC core with a 60 keyway.

2.4 PANIC DEVICES

A. Panic devices are to be of the type and style listed. All devices are to beUL listed for exit. Devices used on fire doors are to be UL listed for use on fire doors.

B. All panic devices are to be tested in accordance in ANSI A156.3, GRADE 1. All single panic devices are to be equipped with deadlocking latch bolts.

C. Rim type devices, where specified shall be provided with stainless steel roller type strikes. Vertical rod type devices, where indicated are to be equipped with automatic latch retraction and mortise type floor strikes.

D. Basis for design is Corbin Russwin ED 5000 series exit.

2.5 CLOSERS

A. Typical Closer basis for design is Corbin Russwin DC6200 Series.

2.6 FINISH

A. The Finish in General Shall Be Satin Chrome (BHMA 626)

B. Satin Stainless Steel (BHMA 630) may be provided at the supplier's option.

C. Door Closers Shall Be Painted Aluminum (BHMA 691/US10B).

D. Thresholds and weatherstrips shall be mill finish aluminum.

2.7 FASTENERS

A. Where hex nut bolts are specified in paragraph 3.5, furnish hex bolts sized to the thickness of the door.

B. Wood screws are to be threaded to the head.

C. Material of fasteners shall be ferrous or non-ferrous matching the product being applied.

D. Length of fasteners shall be sufficient to afford adequate thread engagement.

2.8 KEYING

A. All locks are to be subject to a GRAND MASTER KEY SYSTEM. Locks are to be keyed alike in groups as required.
1. Furnish four (4) keys per keyed alike set and two (2) keys each for all other locks.
2. Furnish six (6) master keys.
3. Furnish ten (10) exterior door key blanks.

B. Key Control System

1. Provide a complete key control system including envelopes, labels, tags with self locking key clips.

PART 3 - EXECUTION

3.1 INSPECTION

A. Conditions of opening size shall be verified by the general contractor as to door frames being plumb and of correct tolerances to receive door and hardware.

3.2 INSTALLATION

A. The installer shall be competent and have knowledge of hardware.

B. Mounting Heights for All Hardware Shall Be Recommended by the Door and Hardware Institute.

3.3 ADJUSTING

A. The general contractor shall be responsible for final adjustments on all items of finish hardware. He shall replace or repair any items of hardware until owner accepts the project as complete.

3.4 PROTECTION

A. The general contractor is responsible for protection of all items of hardware until owner accepts the project as complete.

3.5 HARDWARE SETS

(HW-1) (Entry Function) Door 101
Each to Receive:

1 SET	HINGES	TA2714 4 ½ x 4 ½	BHMA 626	MCKINNEY
1 EA	LOCKSET	CL3851 NZD	BHMA 626	CORBIN RUSSWIN
1 SET	DOOR SILENCERS		608	ROCKWOOD
1 EA	STOP	406	BHMA 626	ROCKWOOD

(HW-2 (Storage function) door 102
Each Pair to Receive:

2 SET	HINGES	TA2714 4 ½ x 4 ½	BHMA 626	MCKINNEY
1 EA	LOCKSET	CL3857 NZD	BHMA 626	CORBIN RUSSWIN
1 EA	LATCH	CL3810 NZD	BHMA	CORBIN RUSSWIN
1 SET	DOOR SILENCERS		608	ROCKWOOD
2 EA	OH STOPS & HOLDERS	904-H X SNB	US32D	GLYNN JOHNSON
2 EA	MANUAL FLUSH BOLTS with 570 dust proof strike	557	US26D	ROCKWOOD

(HW-3) (Restrooms) doors 104 AND 105
Each to receive:

1 SET	BALL BEARING HINGE	TA2714 4 ½ x 4 ½ TB	BHMA 626	MCKINNEY
1	INDICATOR LOCK	B571	BHMA 626	SCHLAGE
1	PASSAGE SET	CL3810	BHMA 626	CORBIN RUSSWIN
1	CLOSER	DC6210	BHMA 695	CORBIN RUSSWIN
1	STOP	406	BHMA 626	ROCKWOOD
1 SET	DOOR SILENCERS	608		ROCKWOOD
1 EA	KICK PLATE	K1050-10" X 2 LDW	US32D	ROCKWOOD

(HW-4) (Storage function) door 106
Each to Receive:

1 SET	HINGES	TA2714 4 ½ x 4 ½	BHMA 626	MCKINNEY
1 EA	LOCKSET	CL3857 NZD	BHMA 626	CORBIN RUSSWIN
1 SET	DOOR SILENCERS		608	ROCKWOOD
1 EA	STOP	406	BHMA 626	ROCKWOOD

(HW-5) door E100A
Each to Receive:

1 SET	HINGES	TA2714 4 ½ x 4 ½ NRP	BHMA 626	MCKINNEY.
1 EA	RIM EXIT DEVICE	ED4200 N855 M54 x PAC1 (Persona Campus Software)	BHMA 626	CORBIN RUSSWIN
1 EA	THRESHOLD	170D x door width		PEMKO
1 EA	CLOSER	DC6210 M54	BHMA 695	CORBIN RUSSWIN
1 EA	DOOR BOTTOM SWEEP	315DN X door width		PEMKO
1 SET	GASKETING	S88 length as required		PEMKO
1 EA	RAIN GUARD	346D (4" ODW)		PEMKO

ACCESS BY KEY PAD AFTER HOURS.

END OF SECTION

SECTION 08 80 00
GLASS AND GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes glazing for the following products, including those specified in other Sections where glazing requirements are specified by reference to this Section:
   1. Vision lites.
   2. Entrances and other doors.
   3. Mirrors

1.3 DEFINITIONS

A. Manufacturer is used in this Section to refer to a firm that produces primary glass or fabricated glass as defined in the referenced glazing standard.

B. Deterioration of Insulating Glass: Failure of the hermetic seal under normal use due to causes other than glass breakage and improper practices for maintaining, and cleaning insulating glass. Evidence of failure is the obstruction of vision by dust, moisture, or film on the interior surfaces of glass. Improper practices for maintaining and cleaning glass do not comply with the manufacturer's directions.

1.4 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems that are produced, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading (where applicable), without failure including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; and other defects in construction.

1.5 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.

B. Product data for each glass product and glazing material indicated.

C. Samples for verification purposes of 12-inch-square samples of each type of glass indicated except for clear monolithic glass products, and 12-inch-long samples of each color required (except black) for each type of sealant or gasket exposed to view. Install sealant or gasket sample between two strips of material representative in color of the adjoining framing system.

D. Product certificates signed by glazing materials manufacturers certifying that their products comply with specified requirements.
   1. Separate certifications are not required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program of a recognized certification agency or independent testing agency acceptable to authorities having jurisdiction.

E. Compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed for adhesion.

F. Compatibility test report from manufacturer of insulating glass edge sealant indicating that glass edge sealants were tested for compatibility with other glazing materials including sealants, glazing tape, gaskets, setting blocks,

and edge blocks.

G. Product test reports for each type of glazing sealant and gasket indicated, evidencing compliance with requirements specified.

H. Maintenance data for glass and other glazing materials to include in Operating and Maintenance Manual specified in Division 1.

1.6 QUALITY ASSURANCE

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
   1. FGMA Publications: "FGMA Glazing Manual."

B. Safety Glass: Products complying with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.
   1. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.

C. Insulating Glass Certification Program: Provide insulating glass units permanently marked either on spacers or at least one component lite of units with appropriate certification label of inspecting and testing agency indicated below:
   1. Insulating Glass Certification Council (IGCC).

D. Glazier Qualifications: Engage an experienced glazier who has completed glazing similar in material, design, and extent to that indicated for Project with a record of successful in-service performance.

E. Single-Source Responsibility for Glass: Obtain glass from one source for each product indicated below:
   1. Primary glass of each (ASTM C 1036) type and class indicated.
   2. Heat-treated glass of each (ASTM C 1048) condition indicated.
   3. Insulating glass of each construction indicated.

F. Single-Source Responsibility for Glazing Accessories: Obtain glazing accessories from one source for each product and installation method indicated.
   1. Testing is not required when glazing sealant manufacturer can submit required preparation data that is acceptable to Architect and is based on previous testing of current sealant products for adhesion to and compatibility with submitted glazing materials.

G. Each light shall bear the manufacturer's label designating the type and thickness of glass. When approved by the Building Official labels may be omitted from other than tempered glazing materials providing an affidavit is furnished by the glazing contractor certifying that each light is glazed in accordance with the approved plans and specifications.

H. Each unit of tempered glass shall be permanently identified by the manufacturer. The identification shall be etched or ceramic fired on the glass and be visible when the unit is glazed. Tempered spandrel glass is exempted from permanent labeling. This type of glass shall be identified with a removable paper label by the manufacturer.

I. Individual glazed areas in hazardous locations shall pass the test requirements of CPSC 16-CFR, Part 1201 or by comparative test shall be proven to produce at least equivalent performances.

   EXCEPTIONS:

   1. Polished wire glass for use in fire doors, fire windows and view panels in 1-hour fire resistant walls and

hazardous locations in 2703.2.1 (6) and 2703.2.1 (7) shall comply with ANSI Z97.1

2. Approved plastic materials used as glazing in hazardous locations shall comply with ANSI Z97.1.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials to comply with manufacturer's directions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
   1. Where insulating glass units will be exposed to substantial altitude changes, comply with insulating glass fabricator's recommendations for venting and sealing to avoid hermetic seal ruptures.

1.8 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing materials manufacturer or when glazing channel substrates are wet from rain, frost, condensation, or other causes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products specified in Product Data Sheets at end of this Section, or approved equal.

2.2 PRIMARY FLOAT GLASS PRODUCTS

A. Float Glass: ASTM C 1036, Type I (transparent glass, flat), Class as indicated below, and Quality q3 (glazing select).
   1. Class 1 (clear) unless otherwise indicated.
   2. Class 2 (tinted, heat absorbing and light reducing) where indicated.

B. Refer to requirements for sealed insulating glass units for performance characteristics of assembled units composed of tinted glass, coated or uncoated, relative to visible light transmittance, U-values, shading coefficient, and visible reflectance.

2.3 MIRROR GLASS

A. Type 1, Class 1 (transparent), Quality q2 (mirror), with silver coating, copper protective coating complying with CS27, and 2 mil thick paint coating; 1/4" thick, edges ground smooth.

2.4 HEAT-TREATED FLOAT GLASS PRODUCTS, GENERAL

A. Fabrication Process: By vertical (tong-held) or horizontal (roller-hearth) process, at manufacturer's option, except provide horizontal process where indicated as tongless or free of tong marks.

2.5 HEAT-TREATED FLOAT GLASS

A. Uncoated, Clear, Heat-Treated Float Glass: ASTM C 1048, Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), kind as indicated below.
   1. Kind FT (fully tempered) where required.

B. Coated, Tinted, Heat-Treated Float Glass: ASTM C 1048, Condition C (other coated glass), Type I (transparent glass, flat), Class 2 (tinted heat-absorbing and light-reducing), Quality q3 (glazing select), with kind, coating type, and performance characteristics complying with requirements specified under coated glass products.
   1. Kind FT (fully tempered) where required.

C. Manufacturers: Subject to compliance with requirements, provide heat-treated glass by one of the following companies, or approved equal.
   1. AFG Industries, Inc.
   2. Cardinal IG.
   3. Guardian Industries Corp.
   4. HGP Industries.
   5. PPG Industries, Inc.
   6. Spectrum Glass Products, Inc.
   7. Tempglass.
   8. Viracon, Inc.

2.6 COATED MONOLITHIC GLASS PRODUCTS

A. General: Performance characteristics designated for coated monolithic glass products are nominal values based on manufacturer's published test data for glass products 6.0 mm thick (0.23 inch thick), unless otherwise indicated. Comply with requirements specified including those for primary and heat-treated float glass products as they relate to properties of glass to which coatings are applied.
   1. U-values are expressed as Btu/hour x sq. ft. x deg F.
   2. Provide heat-treated coated float glass of kind indicated or, if not otherwise indicated, Kind HS (heat strengthened) where recommended by manufacturer to comply with system performance requirements specified and Kind FT (fully tempered) where coated safety glass is designated or required.

B. Pyrolytically Coated Glass Products: Float glass with solar-reflective metallic oxide coating applied pyrolytically either during initial manufacture or during heat treatment, complying with requirements specified in Pyrolytically Coated Monolithic Glass Product Data Sheet at the end of this Section.

2.7 INSULATING GLASS PRODUCTS

A. Acceptable Manufacturers
   1. Vitro Architectural Glass.
   2. Libby-Owens Ford.
   3. Oldcastle
   3. Substitutions: Under provisions of Section 01 25 13.

B. Glass Materials
   1. Wire Glass: 1/4" clear, diamond pattern meeting Underwriter’s Laboratory requirements for labeled openings.
   2. Clear Safety Glass - Tempered Glass, 1/4" clear, Libby Owens Ford, Tuf-Flex meeting the quality and strength requirements of Federal Specification DD-G-1403 B and the safety criteria of ANSI Z97-1-1975 and Federal Standard 16 CFR 1201. All tempered safety glass shall bear a permanent monogram which signifies compliance with the Federal Standard.
   3. Tinted Safety Glass – Same as Clear Safety Glass except with tint. Color to be selected by Architect.
   4. Clear Float Glass – 1/4" clear, glazing quality.
   5. Tinted Float Glass: 1/4" tinted, glazing quality.
   6. 1" Insulating Safety Glass: Nominal 1" thick consisting of a clear exterior light of 1/4" tempered safety glass sputter coated on second surface and a clear interior light of 1/4" clear tempered safety glass with a ½” air space.
      a. Equal to: Vitro Architectural Glass “Solarban” 90 Solar Control (Sputtered).
      b. Performance Values: Visible light transmittance-51%; U-Value Winter-0.29; SHGC-0.23; Outdoor Visible Light Reflectance-12%; outdoor appearance-clear.
   7. 1" Insulating Glass: Same as 1" Insulating Safety Glass except for Safety glass requirements.
   8. Glazing Compound and Setting Blocks: Type and number recommended by the manufacturer of the glazing condition.
   9. Framed Mirrors: Refer to Toilet Accessories Schedule on Drawings for wood framed mirrors.
   10. Unframed Mirrors: First quality 1/4" tempered plate glass, triple slivered, electro-copper plated with protective backing, guaranteed for 10 years against sliver spoilage. Provide metal edge trim and mirror adhesive.

11. Exterior Glass to have “Low E” coating.

2.8 ELASTOMERIC GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:
   1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturer's recommendations for selecting glazing sealants and tapes that are suitable for applications indicated and conditions existing at time of installation.
   3. Colors: Provide color of exposed joint sealants to comply with the following:
      a. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

B. Elastomeric Glazing Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated that comply with ASTM C 920 requirements indicated on each Elastomeric Glazing Sealant Product Data Sheet at the end of this Section, including those referencing ASTM classifications for Type, Grade, Class and Uses.

2.9 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent, nonstaining and nonmigrating in contact with nonporous surfaces, with or without spacer rod as recommended by tape and glass manufacturers for application indicated, packaged on rolls with a release paper backing, and complying with AAMA 800 for products indicated below:
   1. AAMA 804.1.

B. Expanded Cellular Glazing Tape: Closed-cell, polyvinyl chloride foam tape, factory coated with adhesive on both surfaces, packaged on rolls with release liner protecting adhesive, and complying with AAMA 800 for product 810.5.

C. Products: Subject to compliance with requirements, provide one of the following, or approved equal:
   1. Back-Bedding Mastic Glazing Tape Without Spacer Rod:
      a. PTI 303 Glazing Tape (shimless), Protective Treatments, Inc.
      b. S-M 5700 Poly-Glaze Tape Sealant, Schnee-Morehead, Inc.
      c. Tremco 440 Tape, Tremco Inc.
      d. Extru-Seal, Pecora Corp.
      e. PTI 606 Architectural Sealant Tape, Protective Treatments, Inc.
      f. Dyna-Seal, Pecora Corp.
      g. PTI 626 Architectural Sealant Tape, Protective Treatments, Inc.
      h. S-M 5710 H.P Poly-Glaze Tape Sealant, Schnee-Morehead, Inc.
      i. SST-800 Tape, Tremco, Inc.
   2. Back-Bedding Mastic Glazing Tape With Spacer Rod:
      a. PTI 303 Glazing Tape (with shim), Protective Treatments, Inc.
      b. Pre-shimmed Tremco 440 Tape, Tremco, Inc.
      c. PTI 606 Architectural Sealant Tape, Protective Treatments, Inc.
   3. Expanded Cellular Glazing Tape:
      a. Norseal V-980 Closed-Cell Glazing Tape, Norton Company.

2.10 GLAZING GASKETS

A. Lock-Strip Gaskets: Neoprene extrusions in size and shape indicated, fabricated into frames with molded corner units and zipper lock strips, complying with ASTM C 542, black.

B. Dense Compression Gaskets: Molded or extruded gaskets of material indicated below, complying with standards

referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:
1. Neoprene, ASTM C 864.
2. EPDM, ASTM C 864.
3. Silicone, ASTM C 1115.
4. Thermoplastic polyolefin rubber, ASTM C 1115.
5. Any material indicated above.

C. Soft Compression Gaskets: Extruded or molded closed-cell, integral-skinned gaskets of material indicated below, complying with ASTM C 509, Type II, black, and of profile and hardness required to maintain watertight seal:
1. Neoprene.
2. EPDM.
3. Silicone.
4. Thermoplastic polyolefin rubber.
5. Any material indicated above.

D. Manufacturers: Subject to compliance with requirements, provide products by one of the following companies, or approved equal:
1. Lock-Strip Gaskets:
   a. Stanlock Div., Griffith Rubber Mills.
2. Preformed Gaskets:
   a. Advanced Elastomer Systems, L.P.
   b. Schnee-Morehead, Inc.
   c. Tremco, Inc.

2.11 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials involved for glazing application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85 plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side-walking).

F. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonextruding, nonoutgassing, strips of closed-cell plastic foam of density, size, and shape to control sealant depth and otherwise contribute to produce optimum sealant performance.

G. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistive rating.

2.12 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard as required to comply with system performance requirements.

SECTION 08 80 00
GLASS AND GLAZING

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine glass framing, with glazier present, for compliance with the following:
   1. Manufacturing and installation tolerances, including those for size, squareness, offsets at corners.
   2. Presence and functioning of weep system.
   3. Minimum required face or edge clearances.
   4. Effective sealing between joints of glass-framing members.

B. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, except where more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions as indicated on Drawings provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass from edge damage during handling and installation as follows:
   1. Use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass lites with flares or bevels on bottom horizontal edges so edges are located at top of opening, unless otherwise indicated by manufacturer's label.
   2. Remove damaged glass from Project site and legally dispose of off site. Damaged glass is glass with edge damage or other imperfections that, when installed, weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install elastomeric setting blocks in sill rabbets, sized and located to comply with referenced glazing standard, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass sizes larger than 50 united inches (length plus height) as follows:
   1. Locate spacers inside, outside, and directly opposite each other. Install correct size and spacing to preserve required face clearances, except where gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and comply with system performance requirements.
   2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking to comply with requirements of referenced glazing publications, unless otherwise required by glass manufacturer.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

SECTION 08 80 00
GLASS AND GLAZING

3.4 PROTECTION AND CLEANING

A. Protect exterior glass from breakage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for build-up of dirt, scum, alkali deposits, or stains, and remove as recommended by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period.

E. Wash glass on both faces in each area of Project not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

END OF SECTION

SECTION 092116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Acoustic insulation.

C. Gypsum wallboard.

D. Joint treatment and accessories.

E. Textured finish system.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Building framing and sheathing.

B. Section 079200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

A. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017 (Reapproved 2022).

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.

C. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.

D. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base 2019.

E. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.

F. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels 2019.

G. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2021.

H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009 (Reapproved 2016).

I. ASTM E413 - Classification for Rating Sound Insulation 2022.

J. GA-216 - Application and Finishing of Gypsum Panel Products 2021.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of gypsum board assemblies with size, location, and installation of service utilities.

B. Sequencing: Install service utilities in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on gypsum board, accessories, and joint finishing system.

C. Samples: Submit two samples of gypsum board finished with proposed texture application, 12 by 12 inches (300 by 300 mm) in size, indicating finish color and texture.

D. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company: www.americangypsum.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
   4. Gold Bond Building Products, LLC provided by National Gypsum Company: www.goldbondbuilding.com/#sle.
   5. USG Corporation: www.usg.com/#sle.
   6. Or approved equal.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Thickness:
      a. Vertical Surfaces: 5/8 inch (16 mm).
      b. Ceilings: 1/2 inch (13 mm).

2.03 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; thickness as required for STC.

B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.

C. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
   1. Corner Beads: Low profile, for 90 degree outside corners.
   2. Expansion Joints:
      a. Type: V-shaped PVC with tear away fins.

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.

E. 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 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.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

3.04 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 (10 meters) apart on walls and ceilings over 50 feet (16 meters) long.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.05 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 3: Walls to receive textured wall finish.
   2. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

3.06 TEXTURE FINISH

A. Apply finish texture coating by means of roller in accordance with manufacturer's instructions and to match approved sample.

END OF SECTION

SECTION 096500
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient base.

B. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 033000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.

1.03 REFERENCE STANDARDS

A. ASTM F1861 - Standard Specification for Resilient Wall Base 2021.

B. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride 2022.

C. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes 2019a.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Verification Samples: Submit two samples, of manufacturer standard size illustrating color and pattern for each resilient flooring product specified.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 016000 - Product Requirements, for additional provisions.
   2. Extra Wall Base: quantity equivalent to 5 percent of amount installed for each type and color.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

D. Protect roll materials from damage by storing on end.

1.06 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 SHEET FLOORING

2.02 RESILIENT BASE

A. Resilient Base - Type RB-1: ASTM F1861, Type TS, rubber, vulcanized thermoset; style as scheduled.
   1. Manufacturers:
      a. Johnsonite, a Tarkett Company; Baseworks Thermoset Rubber Wall Base: www.johnsonite.com/#sle.
      b. Roppe Corporation; Contours Profiled Wall Base System: www.roppe.com/#sle.
      c. Approved Equal
   2. Height: 4 inches.
   3. Thickness: 0.125 inch.

4. Finish: Satin.
5. Profile: Standard Toe (Cove Base)
6. Length: Roll.
7. Color: 186 Mousi.
8. Accessories: Premolded external corners and internal corners.

2.03 ACCESSORIES

A. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
   1. Johnsonite #960 Cove Base Adhesive (Porous applications)
   2. Johnsonite #946 Premium Contact Bond Adhesive (Non-Porous applications)

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

3.02 INSTALLATION - SHEET FLOORING

A. Lay flooring with joints and seams parallel to longer room dimensions, to produce minimum number of seams. Lay out seams to avoid widths less than 1/3 of roll width; match patterns at seams.

3.03 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.04 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

END OF SECTION

SECTION 09 77 20
DECORATIVE FIBERGLASS REINFORCED WALL PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Special wall surfaces, including fiberglass reinforced plastic panels.

B. Related Sections: Sections related to this section include:
   1. Section 09 21 00 - Gypsum Board Assemblies
   2. Section 09 65 13 - Resilient Wall Base

1.2 REFERENCES

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation

B. ASTM International:
   1. ASTM D2583 Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
   2. ASTM D5420 Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).
   3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements: Provide fiberglass reinforced plastic (FRP) panels which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.4 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. Samples: Submit selection and verification samples for finishes, colors and textures. Submit 2 samples of each type of panel, trim and fastener.

D. 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, criteria and physical requirements.
   3. Manufacturer's installation instructions. Submit manufacturer's Installation Guide.

1.5 QUALITY ASSURANCE

A. Qualifications:
   1. Installer Qualifications: Installer should be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.
   2. Manufacturer Qualifications: Manufacturer should be capable of providing field service representation during construction and should be capable of approving application method.

B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Package sheets on skids or pallets for shipment to project site.

C. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Store panels indoors in a dry place at the project site.

D. Handling: Remove foreign matter from face of panel by using a soft bristle brush, avoiding abrasive action.

1.6 PROJECT CONDITIONS

A. Environmental Requirements:
   1. Installation shall not begin until building is enclosed, permanent heating and cooling equipment is in operation, and residual moisture from plaster, concrete or terrazzo work has dissipated.
   2. During installation, and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
   3. Provide ventilation to disperse fumes during application of adhesive as recommended by adhesive manufacturer.

B. 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.

1.7 WARRANTY

A. 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: 10 years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Marlite. (www.marlite.com) is specified. Other acceptable manufacturers include:
   2. Crane Composites (www.cranecomposites.com)
   3 Nudo Products, Inc. (www.nudo.com)
   4. Panolam Industries International, Inc. (www.panolam.com)

2.2 MATERIALS

A. Wall Panels: Marlite Standard FRP in smooth finish.
   1. Type: Glass fiber reinforced plastic.
   2. Class A Fire Rated
   3. Size: 0.090" (3/32 inch nominal) thick x 48 inches wide x maximum practical length.
   4. Color: To be selected from manufacturer's full color range.

2.3 ACCESSORIES

A. Adhesive: Provide panel adhesive and color match sealant as recommended by panel manufacturer.

B. Moldings and trim as required for a complete installation.

2.4 RELATED MATERIALS

A. Related Materials: Refer to other sections listed in Related Sections paragraph herein for related materials.

2.5 SOURCE QUALITY

A. Source Quality: Obtain fiberglass reinforced plastic (FRP) panels from a single manufacturer. Provide panels and molding only from manufacturer specified to ensure warranty and color harmonization of accessories.

PART 3 EXECUTION

3.1 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.

3.2 EXAMINATION

A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
   1. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails are countersunk and joints and cracks are filled flush and smooth with the adjoining surface.
   2. Do not begin installation until backup surfaces are in satisfactory condition.

3.3 PREPARATION

A. Surface Preparation: Repair or patch all existing or new gypsum board finishes to provide smooth, secure, plumb and true surfaces on which panels are to be installed.

3.4 INSTALLATION

A. Fiberglass Reinforced Panel (FRP) Installation:
   1. Cut and drill panels with carbide tipped saw blades or drill bits, or cut with snips.
   2. Install panels with manufacturer's recommended gap for panel field and corner joints.
   3. Predrill fastener holes in panels with 1/8 inch (3.2 mm) oversize.
   4. For trowel type and application of adhesive, follow adhesive manufacturer's recommendations.

5. Use products acceptable to panel manufacturer and install FRP system in accordance with panel manufacturer's printed instructions. Comply with panel manufacturer's Installation Guide.

3.6 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace products that have been installed and are damaged. 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 any adhesive or excessive sealant from panel face using solvent or cleaner recommended by panel manufacturer.

3.7 PROTECTION

A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION

SECTION 09 90 00
PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Division 1 Specification

B. Section 08 11 00 - Steel Doors and Frames.

C. Section 08 36 00 - Sectional Overhead Doors.

D. Section 13 34 19 - Pre-Engineered Metal Building.

E. Division 26 for painting of electrical work.

1.2 SUMMARY

A. This Section includes surface preparation, painting, and finishing of exposed exterior and interior items and surfaces.
   1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop-priming and surface treatment specified under other Sections.

B. Paint all hollow metal doors and frames (not hinges and hardware), sectional overhead door, bollards, exterior conduit, exterior electrical panels, and any supports for exterior electrical panels. Do not paint electrical conduit or boxes exposed on the interior. Paint gypsum board ceiling in Flammable Storage Building.

C. Architect will select from standard colors or finishes available.

D. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.

E. Examine Contract Documents to determine full extent of painting and finishing work required. Materials provided under other Sections that need painting or finishing and are left unfinished under requirements of other Specification Sections, shall be painted and finished to completion under work of this Section, unless specifically scheduled herein to be left unfinished.

F. Preparatory work of materials and surfaces to receive paint beyond that specified to be done as work of other Sections, shall be included as work of this Section.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern..
   1. Federal Specifications (Fed. Spec.):
      TT-D-65 Drier; Paint, Liquid
      TT-T-801 Turpentine, Gum Spirits, Steam Distilled, Sulfate Wood, and Destructively Distilled

2. Steel Structures Painting Council (SSPC):
   SP 2 Hand Tool Cleaning
   SP 3 Power Tool Cleaning

1.4 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each paint system specified, including block fillers and primers.
   1. Provide the manufacturer's technical information including label analysis and instructions for handling, storage, and application of each material proposed for use.
   2. List each material and cross-reference the specific coating, finish system, and application. Identify each material by the manufacturer's catalog number and general classification.

C. Samples for initial color selection in the form of manufacturer's color charts.
   1. After color selection, the Architect will furnish color chips for surfaces to be coated.

D. Samples for Verification Purposes: Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to those indicated for the Project that have resulted in a construction record of successful in-service performance.

B. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

C. Field Samples: On wall surfaces and other exterior and interior components, duplicate finishes of prepared samples. Provide full-coat finish samples until required sheen, color, and texture are obtained; simulate finished lighting conditions for review of in-place work.
   1. Final acceptance of colors will be from job-applied samples.
   2. The Architect will select one room or surface to represent surfaces and conditions for each type of coating and substrate to be painted. Apply coatings in this room or surface according to the schedule or as specified.
      a. After finishes are accepted, this room or surface will be used to evaluate coating systems of a similar nature.

D. Coordination: Review other Specification Sections where primers are provided to ensure compatibility with finish coatings provided under this Section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
   1. Product name or title of material.

2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
   1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 JOB CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 deg C).

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).

C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
   1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by the manufacturer during application and drying periods.
   2. Do not paint exterior surfaces while surfaces are exposed to the hot sun.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS: Sherwin Williams is specified. Provided specified products or approved equals by one of the following.

A. Latex and Alkyd Based Paints. Provide products of one of the following manufacturers that meet or exceed specified requirements:
   1. Devoe and Raynolds Co. (Devoe).
   2. Fuller O'Brien (Fuller).
   3. The Glidden Company (Glidden).
   4. Benjamin Moore and Co. (Moore).
   5. PPG Industries, Pittsburgh Paints (PPG).
   6. Pratt and Lambert (P & L).
   7. The Sherwin-Williams Company (S-W).

B. Materials used shall be best grade products of their respective kinds. The Painting Schedule is based on products of the above named manufacturers. These are specified to establish a standard of quality and kind of material desired. Provide these products, or equals as approved by Architect.

C. Note: If substitutes are proposed, submit complete schedule showing materials specified and

equivalent materials proposed as substitutes. Provide complete manufacturer's product data on proposed materials. Substitutes must be approved by Architect before commitment for materials is made.

D. Assume full responsibility for proper performance of materials, for method of application, and for compatibility of materials applied over shop coats or other coats previously applied, including but not limited to primers, sealers, preservative treatments, etc. Notwithstanding specific schedules in this Section, select primers which have been verified to be appropriate for each of the substrates and finishes encountered.

E. Provide miscellaneous painting materials such as linseed oil, shellac, turpentine, and thinner of the highest quality.

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field experience.

B. Material Quality: Provide the manufacturer's best-quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.
   1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: Match colors indicated by reference to the manufacturer's standard color designations. At areas to be touched up, match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.
   1. Do not begin to apply paint until unsatisfactory conditions have been corrected.
   2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
   1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.
   1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish-coat material with substrates primed by others.
   2. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen, as required, to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
      a. Use abrasive blast-cleaning methods if recommended by the paint manufacturer.
      b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's printed directions.
      c. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
      d. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
      e. When transparent finish is required, back-prime with spar varnish.
      f. Back-prime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.
      g. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately upon delivery.
   3. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
   4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so that the surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
   5 Field-Welded Ferrous Metal: After installation, field-welding, and grinding, and immediately before painting, remove rust, loose mill scale, dirt, weld flux, weld spatter, weld smoke stains, burnt primer, and other foreign material with wire brushes and/or steel scrapers. Power tool clean in accordance with SSPC SP 3. Remove grease and oil by use of solvent recommended by paint manufacturer. Sand exposed surfaces, and between coats, as required to produce smooth, even finishes.
      a. Sand smooth and spot prime welded areas, and areas where prime coat has been damaged or abraded, using rust inhibitive primer scheduled in this Section.
   4. Other Ferrous Metal: Remove rust, mill scale, and foreign materials. Wire brush or sand damaged or rusted area to bright metal. Remove grease or dirt with solvents recommended by paint

manufacturer just prior to applying paint.
   a. Spot prime all areas where shop coat has been damaged or abraded, using same type of paint as used for shop coat.
5. Non-Ferrous Metal: Prepare shop primed non-ferrous metals similarly to ferrous metals, specified above.
   a. Prepare unprimed non-ferrous metals by thoroughly cleaning of oil, grease, and temporary protective coatings using solvent recommended by primer manufacturer. Provide additional pretreatment recommended by primer manufacturer to assure permanent adhesion of paint coats.

6. Other Materials: Prepare other materials in strict accordance with recommendations of manufacturers of materials to be finished, and primers and finishes to be applied.

D. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.
   1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
   2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
   3. Use only thinners approved by the paint manufacturer and only within recommended limits.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
   1. Paint colors, surface treatments, and finishes are indicated in the schedules.
   2. Provide finish coats that are compatible with primers used.
   3. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth even surface according to the manufacturer's directions.
   4. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
   5. The term exposed surfaces includes areas visible when permanent or built-in fixtures, convector covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
   6. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
   7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
   8. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
   9. Finish exterior doors on tops, bottoms, and side edges same as exterior faces.
   10. Sand lightly between each succeeding enamel or varnish coat.

11. Omit primer on metal surfaces that have been shop-primed and touch-up painted.

C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
   1. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

D. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.
   1. Brushes: Use brushes best suited for the material applied.
   2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
   3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

E. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

F. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

G. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

H. Pigmented (Opaque) Finishes: Completely cover to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

I. Permanently Fixed Equipment: Paint surfaces behind permanently fixed equipment with prime coat only.

J. Electrical Work: Exterior conduit, boxes and support for panel.

K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with specified requirements.

3.4 CLEANING

A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
   1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
   1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINT SCHEDULE

A. General: Provide the following paint systems for the various substrates indicated.

B. Exterior Ferrous Metal: **Hollow metal doors and frames, sectional overhead doors, bollards, electrical panels, miscellaneous steel** (Primer is not required on shop-primed items.)
   1. Primer: Sherwin Williams Kem Kromik Universal Metal Primer B50NZ6.
   2. First and Second Coats: Sherwin Williams DTM Alkyd Semi-Gloss Coating B55 series.

C. Exterior Zinc-Coated Metal:
   1. Primer: Sherwin Williams Galvite HS.
   2. First and Second Coats: Sherwin Williams DTM Alkyd Semi-Gloss Coating B55 series.

3.7 INTERIOR PAINT SCHEDULE

A. General: Provide the following paint systems for the various substrates, as indicated.

B. Gypsum Board Ceilings:
   2. Lusterless (Flat) Emulsion Finish: Two coats.
      a. Primer: Sherwin Williams B28W2601 - High Build Interior Latex Primer White.
      b. First and Second Coats: Interior, egshell, latex-based paint.
         1) S-W: B30W04651 - ProMar 400 Zero VOC Interior Latex Flat Extra White

C. Gypsum Board Walls - **For shop-facing walls and restroom walls, refer to Section 09 96 00 - High Performance Coatings:**
   1. Eggshell Emulsion Finish: Two coats.
      c. Primer: Sherwin Williams B28W2600 - 0 VOC Latex Primer.
      d. First and Second Coats: Interior, egshell, latex-based paint.
         1) S-W: B20W2651 - ProMar 200 Zero VOC Interior Latex Egshel

D. Interior Wood Trim, Doors, and as noted for Opaque Finish:
   1. Semi-Gloss Enamel Finish: Two coats.
      a Primer: Premium Wall and Wood Primer
         1) Sherwin Williams 28W08111 Interior Latex White
   2. First and Second Coats:
         1) S-W: ProMar 200 Alkyd Semi-Gloss B34W00251

E. Ferrous Metal: Metal doors, jambs, handrails, railings, exposed metal building frame
   1. Semi-Gloss Alkyd Enamel: Two finish coats over primer.
      a. Primer: Synthetic rust-inhibiting primer.
         1) S-W: Kem Kromik Metal Primer B50N2/B50W1.
      b. First and Second Coats: Semi-Gloss alkyd enamel.

1) S-W: ProMar 200 Alkyd Semi-Gloss B34W00251.

Pre-Engineered Metal Building: **Factory priming** is specified under Section 13 34 19 - Pre-Engineered Metal Building.

E. Opaque Finish Woodwork: Shelves, etc. as noted.
1. Primer: Sherwin Williams B28W08111 interior latex primer.
2. First and Second Coats: Sherwin Williams Promar 200 Alkyd Semi-Gloss B34W251

END OF SECTION

SECTION 09 96 00
HIGH PERFORMANCE COATINGS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

B. Section 09 21 00 - Gypsum Board Assemblies.

D. Section 09 90 00 - Painting.

1.2 SUMMARY

A. Scope: Provide labor, material, equipment, related services, and supervision required, including, but not limited to, manufacturing, fabrication, erection, and application of high performance coatings as required to complete performance of the work, and as shown on the Drawings and herein specified.
   1. This product shall meet or exceed this criteria. Paint shall contain anti-microbial to inhibit the growth of mold, mildew, and bacteria from setting up on the dried paint film. The product shall meet or exceed the LEED standards and shall meet or exceed 3000 scrub cycles on the ASTM D2486 and shall meet or exceed Stain Resistance an d Washability ASTM D4828 test. Product should also have a Hazardous Material Identification System (HMIS) Health rating of 1.

B. Section Includes**:** The work specified in this Section includes, but shall not be limited to, the following:
   1. Surface preparation.
   2. Water-based single component 100% acrylic paint finish system.

1.3 REFERENCES

A. General: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only. The edition/revision of the referenced publications shall be the latest date as of the date of the Contract Documents, unless otherwise specified.

B. ASTM (ASTM)
   1. ASTM D 1308, “Standard Test Method for Effect of Household Chemicals on Clear Pigmented Organic Finishes.”
   2. ASTM D 2486, “Standard Test Method for Scrub Resistance of Interior Latex Flat Wall Paints.”
   3. ASTM D 2794, “Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).”
   4. ASTM E 84, “Standard Test Method for Surfacie Burning Characteristics of Building Materials.”

C. Painting and Decorating Contractors of America (PDCA):
   1. PDCA P5, “Benchmark Sample Procedures for Paint and Other Decorative Coating Systems.”

D. South Coast Air Quality Management Distric (SCAQMD):
   1. SCAQMD Rule #1113, “Architectural Coatings,” including most recent amendments.

1.4 SYSTEM DESCRIPTION

A. Performance:
   1. VOC: Coatings shall have less than 50 g/l of VOCs.
   2. Fire Rating: Coatings shall be Type I or Class A fire-rated, ASTM E 84.
   3. Scrub Test: Greater than 3000 cycles, ASTM E 2486.

4. Impact Resistance: Greater than 60 in/lbs, ASTM D 2794.
5. Chemical Resistance: 10 (test maximum) for all chemicals tested, ASTM D 1308.
6. Finish: 10% to 15% gloss at 60 degrees.
7. StainRemoval: 8 to 10 (test maximum) for all stains tested, four-hour Open Spot Test.

1.5 SUBMITTALS

A. General: See Section 01 33 00 - Submittals.

B. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Product data shall include, but not be limited to, manufacturer's product data and application instructions.

C. Finish Samples:
   1. Sample Card: Submit two sample cards indication manufacturer's standard selection of finish colors.
   2. Submit two 4 inch by 5 inch samples of cardboard with specified or selected colors.
   3. Control Samples: Submit two samples of each finish color to ensure ability to reproduce selected finishes.

D. Quality Control Submittals: Submit letter from manufacturer stating that applicator has completed manufacturer's training program.

E. Submit certification by the manufacturer confirming that products meet or exceed the volatile organic compouond (VOC) limits specified.

1.6 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer Qualifications: manufacturer shall be a firm engaged in the manufacture of decorative finishes of types and sizes required.
      a. Manufacturer to certify they make all materials in this Section.
      b. All materials within special coatings section including, but not limited to, finishes, and primers shall be supplied by one manufacturer.

B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals from such authorities.

C. Pre-Application Conference: conduct pre-application conference in accordance with Section 01 39 19 - Project Meetings. Prior to commencing the application, meet at the Project site to review the material selections, applications procedures, and coordination with other trades. Mock-ups shall be reviewed during the pre-application conference. Pre-application conference shall included but not be limited to, the Contractor, the Applicator, manufacturer's representatives, and any trade that requires coordination with the work. Date and time of the pre-application conference shall be acceptable to the Owner and Architect.

1.7 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 60 00 - Product Requirements.

B. Deliver materials in unopened containers with manufacturer's labels intact.

C. Protect materials from freezing.

D. Store between 50 degrees F (10 degrees C) and 80 degrees F (27 degrees C).

1.8 PROJECT CONDITIONS

A. Apply coating under following conditions:
   1. Temperature of air and substrate is between 50 dergreesF (10 degrees C) and 80 degrees F (27 degrees C). Relative humidity shall be less than 50%.
   2. Prevent wide temperature fluctuations that could cause moisture condensation on freshly coated surfaces.
   3. Application areas shall be f ree of excessive dust.

B. Maintain minimum 80 foot candles on surfaces to be coated.

C. Provide adequate fresh air and ventilation during application.

1.9 WARRANTY

A. General: See Section 01 70 00 - Project Closeout.

B. Special Warranty: The manufacturer shall warrant the work of this Section to be in accordance with the Cotract Documents and free from faults and defects in materials for a period of five years from date of Substantial Completion. This special warrany shall extend the one year period of limitations contained in the General Conditions.

C. Additional Owner Rights: The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

1.10 MAINTENANCE MATERIALS

A. Extra Stock: Provide 5 gallons of each base coat color used. Provide in sealed, labeled containers.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis of Design: Products specified are those as manufactured by Master Coating Technologies. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by other manufacturers are acceptable. The Architect will be the sole judge of the basis of what is equivalent.

B. Substitutions: See Section 01 25 13 - Product Substitutions.
   1. Submit finish samples to match color of specified finishes, product data, application instructions, test reports, etc. Clearly indicate discrepancies between specified product and proposed substitution.

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2.2 MATERIALS

A. Primer: Provide primer recommended by manufacturer for substrate.
   1. New Gypsum Board: Primemaster Primer/Sealer, Master Coating Technologies.

B. Finish System Components:
   1. Finish Coat: Two-component polyurethane-fortified coating and cross-linker.
      A. Basis of Design: Scuffmaster ScrubTough, Master Coating Technololgies.
   2. Miscellaneous Materials: Surface patching compounds and other materials necessary for application of finish systems shall be of high quality and compatible with coating system.

2.3 EQUIPMENT

A. Spray or roll primers and base coats in accordance with manufacturer’s instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which the work is to be applied, and notify the Architect of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until satisfactory conditions have bee corrected.
   1. Verify that substrates are ready to receive work of this Section and are in accordance with coating manufacturer's requirements. Report any conditions that would adversely affect the appearance or performance or the coating systems..
   2. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Applicator.

3.2 PREPARATION

A. Protection: Mask adjacent surfaces to protect from overspray. Protect floors and other surfaces with drop cloths.
   1. Remove items which are not to be coated from surfaces that are to be coated. Tag and protect removed items and store until re-installation. Re-install items after completions or coating application**. Items which are not to be coated include, but shall not be limited to, operating hardware, electrical device plates, HVAC registers and grilles, and factory-finished items.**
   2. Patch and repair substrates as specified in applicable specifications sections. Clean substrates. Remove dirt, grit, loose materials, grease, oil, temporary protective coatings, contamination, and other foreign materials. Sand with 100 grit or finer sand paper, spackle, putty and caulk existing surfaces to produce smooth and uniform substrates. Spot-prime existing water-soluble stains with alcohol or oil-based stain killing primer. Touch-up painted or primed surfaces with compatible paint or specified primer.

B. Gypsum Board: Apply joint tape and compound to joints, fastener heads, dents, and surface flaws as specified in Section 09 21 00 - Gypsum Board Assemblies. Sand smooth and flush with adjacent surfaces. Thoroughly clean sanded areas of dust with a clean damp rag.

J. Previously Painted Surfaces: De-gloss (if necessary) and re-prime previously painted substrates with manufacturer's recommended primer.

3.3 APPLICATION

A. Applicator shall apply coatings in accordance with manufacturer's written instructions.
   1. Closets and storage areas shall be finished inside in the same manner as adjoining rooms.
   2. Finish access panels located in surfaces to receive coatings.

B. Apply as many primer coats as necessary to produce a uniform substrate appearance. Do not exceed manufacturer's recommend coverage rate. Allow to dry prior to application of subsequent coats..

C. Re-prime suction and hot spots on substrate prior to applying base coatings.

D. Over wood and gypsum board, sand primer with 100 grit or finer sand paper. Thoroughly remove dust from sanding with a clean, wet rag.

E. Spray or roll finish to completely cover primer and according to manufacturer's instructions. Apply in a continuous, even film at manufacturer's specified coverage rate.

F. Apply each coat to a natural break point such as an edge or corner without spotting.

G. Finishes shall match approved benchmark samples and shall be free of runs, sags, holidays, and excessive irregularity/unevenness of pattern coat. Transitions between colors and transitions between materials shall be sharp, clean and without overlaps.

3.4 INSPECTION

A. Touch-up and repair unacceptable work.

B. Protect finished areas from damage.

3.5 CLEANING

A. Clean overspray and spills. Remove masking.

B. Repair damage to coatings and surfaces caused by clean-up activities..

3.6 PROTECTION

A. Provide final protection and maintain conditions in a manner acceptable to the Applicator, that shall ensure that the high performance coatings shall be without damage at the time of Substantial Completion.

3.7 COATING SCHEDULE

A. General: Scheduled number of coats is in addition to surface preparation specified above.

B. Gypsum Drywall Systems: **Shop-facing & restroom walls. For other walls see Section 09 90 00 - Painting.)**
   1. Primer: Per manufacturer's recommendations.
   2. Coating: Scuffmaster ScrubTough polyurethane-fortified eggshell coating with cross-linker, Master Coating Technologies. Number of coats as required to achieve uniform finish.

C. **Access Doors and Frames in walls** (Access Doors and Frames in ceilings are specified in Section 09 90 00 - Painting)
   1. Primer: Per manufacturer's recommendations.
   2. Coating: Scuffmaster ScrubTough polyurethane-fortified eggshell coating with cross-linker, Master Coating Technologies. Number of coats as required to achieve uniform finish. Number of coats as required to achieve uniform finish.

END OF SECTION

SECTION 102600
WALL AND DOOR PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Blocking for wall and corner guard anchors.

B. Section 092116 - Gypsum Board Assemblies: Placement of supports in stud wall construction.

1.03 REFERENCE STANDARDS

A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics 2010 (Reapproved 2018).

B. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents 2021.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

D. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials 2022.

E. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies 2023.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.

C. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.
   1. Submit two sections of corner guards, 24 inches long.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.

B. Protect work from moisture damage.

C. Do not deliver products to project site until areas for storage and installation are fully enclosed, and interior temperature and humidity are in compliance with manufacturer's recommendations for each type of item.

D. Store products in either horizontal or vertical position, in compliance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Corner Guards:
   1. Babcock-Davis: www.babcockdavis.com/#sle.
   2. Construction Specialties, Inc; Acrovyn Solid Color and Chameleon Corner Guards: www.c-sgroup.com/#sle.
   3. Inpro: www.inprocorp.com/#sle.
   4. Koroseal Interior Products: www.koroseal.com/#sle.
   5. Approved Equal.

2.02 PERFORMANCE CRITERIA

A. Impact Strength: Unless otherwise noted, provide protection products and assemblies that have been successfully tested for compliance with applicable provisions of ASTM D256 and/or ASTM F476.

2.03 PRODUCT TYPES

2.04 FABRICATION

A. Fabricate components with tight joints, corners and seams.

END OF SECTION

SECTION 104400
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Wood blocking product and execution requirements.

1.03 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers 2022.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher operational features.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Activar Construction Products Group, Inc. - JL Industries; Cosmic Extinguisher - Multipurpose Chemical: www.activarcpg.com/#sle.
   2. Ansul, a Tyco Business: www.ansul.com/#sle.
   3. Kidde, a unit of United Technologies Corp: www.kidde.com/#sle.
   4. Nystrom, Inc: www.nystrom.com/#sle.
   5. Oval Brand Fire Products; Oval Dry Chemical Fire Extinguisher - Multipurpose ABC: www.ovalfireproducts.com/#sle.
   6. Potter-Roemer: www.potterroemer.com/#sle.
   7. Pyro-Chem, a Tyco Business: www.pyrochem.com/#sle.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Class: A:B:C type.
   2. Size: 10 pound (4.54 kg).
   3. Temperature range: Minus 40 degrees F (Minus 40 degrees C) to 120 degrees F (49 degrees C).

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure rigidly in place.

END OF SECTION

SECTION 133419
METAL BUILDING SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufacturer-engineered, shop-fabricated structural steel building frame.

B. Insulated Metal wall and roof panels including soffits and gutters and downspouts.

C. Exterior doors and windows.

1.02 RELATED REQUIREMENTS

A. Section 079200 - Joint Sealants: Sealing joints between accessory components and wall system.

B. Section 081113 - Hollow Metal Doors and Frames.

C. Section 083613 - Sectional Doors.

D. Section 088000 - Glazing.

1.03 REFERENCE STANDARDS

A. AISC 360 - Specification for Structural Steel Buildings 2022.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2021.

F. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes 2021a.

G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2021.

H. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality 2019.

I. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel 2021, with Editorial Revision.

J. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.

K. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process 2022.

L. ASTM A992/A992M - Standard Specification for Structural Steel Shapes 2022.

M. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.

N. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures 2016.

O. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

P. ASTM C991 - Standard Specification for Flexible Fibrous Glass Insulation for Metal Buildings 2016.

Q. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2020.

R. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

S. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a.

T. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength 2020.

U. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength 2022.

V. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2020.

W. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification 2021.

X. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).

Y. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems 2018.

Z. MBMA (MBSM) - Metal Building Systems Manual 2019.

AA. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic) 2019.

BB. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on profiles, component dimensions, fasteners.

C. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections; wall and roof system dimensions, panel layout, general construction details, anchors and methods of anchorage, and installation; framing anchor bolt settings, sizes, locations from datum, and foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths; provide professional seal and signature.

D. Samples: Submit two samples of precoated metal panels for each color selected, 2 by 2 inch in size illustrating color and texture of finish.

E. Erection Drawings: Indicate members by label, assembly sequence, and temporary erection bracing.

F. Manufacturer's Qualification Statement: Provide documentation showing metal building manufacturer is accredited under IAS AC472.
   1. Include statement that manufacturer designs and fabricates metal building system as integrated components and assemblies, including but not limited to primary structural members, secondary members, joints, roof, and wall cladding components specifically designed to support and transfer loads and properly assembled components form a complete or partial building shell.

G. Erector's Qualification Statement.

H. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design structural components, develop shop drawings, and perform shop and site work under direct supervision of a Professional Structural Engineer experienced in design of this type of work.
   1. Design Engineer Qualifications: Licensed in Arkansas.
   2. Comply with 2021 Arkansas Fire Prevention Code (2021 International Building Code) for submission of design calculations as required for acquiring permits.

3. Cooperate with regulatory agency or authorities having jurisdiction (AHJ), and provide data as requested.

B. Perform work in accordance with AISC 360 and MBMA (MBSM).

C. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
   1. Not less than three years of documented experience.

D. Erector Qualifications: Company specializing in performing the work of this section approved by manufacturer.

E. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.

1.07 WARRANTY

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Provide 20 year manufacturer warranty for weather tightness, substrate, and finish..
   1. Include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Buildings Systems:
   1. Butler Manufacturing Company: www.butlermfg.com/#sle.
   2. Ceco Building Systems: www.cecobuildings.com/#sle.
   3. Chief Buildings: www.chiefbuildings.com/#sle.
   4. Kirby Building Systems, a Nucor Company: www.kirbybuildingsystems.com/#sle.
   5. Metallic Building Systems: www.metallic.com/#sle.
   6. Nucor Building Systems: www.nucorbuildingsystems.com/#sle.
   7. VP Buildings: www.vp.com/#sle.
   8. Or Equal

2.02 ASSEMBLIES

A. Single span rigid frame.

B. Bay Spacing: Refer to Drawings.

C. Primary Framing: Rigid frame of rafter beams and columns, canopy beams, and wind bracing.

D. Secondary Framing: Purlins, and other items detailed.

E. Wall System: Preformed metal panels of vertical profile, with sub-girt framing/anchorage assembly and insulation, and accessory components.

F. Roof System: Preformed metal panels oriented parallel to slope, with sub-girt framing/anchorage assembly, insulation, and liner panels, and accessory components.

G. Roof Slope: Refer to Drawings.

2.03 PERFORMANCE REQUIREMENTS

A. Installed Thermal Resistance of Wall System: R-value of 19

B. Installed Thermal Resistance of Roof System: R-value of 30.

C. Design structural members to withstand dead load, applicable snow load, and design loads due to pressure and suction of wind calculated in accordance with applicable code.

D. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.

2.04 MATERIALS - FRAMING

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

B. Structural Tubing: ASTM A500/A500M Grade B cold-formed.

C. Plate or Bar Stock: ASTM A529/A529M, Grade 50.

D. Anchor Bolts: ASTM A307, Grade A, with no preference for protective coatings.

E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1; galvanized to ASTM A153/A153M.

F. Welding Materials: Perform in accordance with AWS D1.1/D1.1M.

G. Primer: SSPC-Paint 20 zinc rich.

H. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
   2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
   3. Height Change, Plastic State: When tested in accordance with ASTM C827/C827M:
      a. Maximum: Plus 4 percent.
      b. Minimum: Plus 1 percent.

2.05 MATERIALS - WALLS AND ROOF

A. Steel Sheet: ASTM A792/A792M aluminum-zinc alloy coated to AZ50/AZM150.

B. Insulation: Roll glass fiber type, faced with reinforced white vinyl, ASTM E84 Class A, flame spread index of 25 or less where exposed, friction fit

C. Metal Building Type, Factory Applied, Vapor-Barrier Insulation Facings: Water vapor permeance no greater than 0.10 perm when tested in accordance with ASTM E96/E96M; flame spread index of 25 or less, and smoke developed index of 40 or less when tested in accordance with ASTM E84.

D. Joint Seal Gaskets: Manufacturer's standard type.

E. Fasteners: Manufacturer's standard type, galvanized to comply with requirements of ASTM A153/A153M, finish to match adjacent surfaces when exterior exposed.

F. Sealant: Manufacturer's standard type.

G. Trim, Closure Pieces, Caps, Flashings, Gutters, Downspouts, Rain Water Diverter, Fascias, and Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

2.06 COMPONENTS

A. Doors and Frames: Manufacturer's standard.

B. Overhead Doors: See Section 083613.

C. Windows: Manufacturer's standard.
   1. Glass and Glazing: See Section 088000.

D. Ventilators: Refer to Mechanical Drawings

E. Wall Louvers: Refer to Mechanical Drawings

2.07 FABRICATION - FRAMING

A. Fabricate members in accordance with AISC 360 for plate, bar, tube, or rolled structural shapes.

B. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.

C. Provide wall opening framing for doors, windows, and other accessory components.

2.08 FABRICATION - WALL AND ROOF PANELS

A. Siding: Minimum 26 gauge metal thickness, 1 1/4" rib profile, 36" net coverage, lapped edges fitted with continuous gaskets.

B. Roofing: Minimum 24 gauge [.511] thickness, 3" profile, 24" wide net coverage, mechanically seamed

C. Liner: Minimum 26 gauge metal thickness, flat profile indicated, lapped V edges fitted with continuous gaskets.

D. Girts/Purlins: Rolled formed structural shape to receive siding, roofing and liner sheet.

E. Internal and External Corners: Same material thickness and finish as adjacent material, profile brake formed to required angles.

F. Flashings, Closure Pieces, Fascia: Same material and finish as adjacent material, profile to suit system.

G. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive type.

H. Flexible Closure Strips: Closed-cell, expanded cellular rubber, self-extinguishing, cut or premolded to match corrugation configuration of roofing and siding sheets. Provide where indicated and necessary to ensure weather tight construction, as well as at base of wall panels to prevent entry by rodents and vermin..

2.09 FABRICATION - GUTTERS AND DOWNSPOUTS

A. Fabricate of same material and finish as roofing metal.

B. Form gutters and downspouts of manufacturer standard profile and size to collect and remove water. Fabricate with connection pieces.

C. Form sections in maximum possible lengths. Hem exposed edges. Allow for expansion at joints.

D. Fabricate support straps of same material and finish as roofing metal, color as selected.

2.10 FINISHES

A. Framing Members: Clean, prepare, and shop prime. Do not prime surfaces to be field welded.

B. Exterior Surfaces of Wall Components and Accessories: Precoated enamel on steel of modified silicone finish, color as selected from manufacturer's standard range.

C. Interior Surfaces of Wall Components and Accessories: Precoated enamel on steel of modified silicone finish, color as selected from manufacturer's standard range.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position

3.02 ERECTION - FRAMING

A. Erect framing in accordance with AISC 360.

B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as indicated.

C. Set column base plates with non-shrink grout to achieve full plate bearing.

D. Do not field cut or alter structural members without approval.

E. After erection, prime welds, abrasions, and surfaces not shop primed.

3.03 ERECTION - WALL AND ROOF PANELS

A. Install in accordance with manufacturer's instructions.

B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.

C. Fasten cladding system to structural supports, aligned level and plumb.

D. Locate end laps over supports. End laps minimum 2 inches. Place side laps over bearing.

E. Provide expansion joints where indicated.

F. Use exposed fasteners.

G. Install sealant and gaskets, providing weather tight installation.

3.04 ERECTION - GUTTERS AND DOWNSPOUTS

A. Rigidly support and secure components. Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.

B. Slope gutters minimum 1/16"/ft

C. Furnish gutter supports spaced at 36" on center maximum.

D. Fabricate, attach and anchor gutter to guard against ice and snow damage.

E. Connect downspouts to drain pipe below concrete apron (refer to drawings for locations).

F. Install splash pads under each surface-draining downspout (refer to drawings for locations).

3.05 INSTALLATION - ACCESSORY COMPONENTS IN WALL SYSTEM

A. Install door frames, doors, overhead doors, and windows and glass in accordance with manufacturer's instructions.

END OF SECTION

SECTION 31 00 10

EARTH OR GRADING

PART 1 GENERAL

1.01 CONSIDERATIONS

A. Earthwork consists of operations required for the preparation of subgrade materials; stock piling materials; scarifying and compaction of sub-grades; finish grading; and other required operations over the area of improvements.

B. Existing site conditions. The site conditions where new structure and new site improvements are to be constructed have been prepared and rough graded previously by others.

1.02 REFERENCES

A. ASTM D 2487--Classification of Soils for Engineering Purposes.

B. ASTM D 6 38--Density of Soil and Soil Aggregate In-place by Nuclear Methods.

1.03 DEFINITIONS

A. Classification: Earthwork materials are classified in accordance with definitions in this Article.

B. Subgrade: Natural soil at the established lines and grades.

C. Earthen Fill: Suitable, clean material excavated on-site or imported borrow material meeting specified characteristics.

D. Finish Grading: perations required for smoothing disturbed areas that are not overlaid with pavement.

E. Excavation: Excavation of every description and of whatever substances encountered within the limits of the project to the lines and grades indicated.

F. Compaction: Compaction of soil materials shall be measured as a percent of Standard Proctor density as determined by ASTM D6 38.

PART 2 PRODUCTS

2.01 EARTHEN FILL

A. General site fill shall be comprised of imported soils meeting the following: Fill material shall be clean, sandy clay or sandy loam materials free from clods of clay and stones larger than 75 mm (3 inches); organic material, including silts, which are unstable; and inorganic materials, including silts, too wet to be stable and any material with a liquid limit and plasticity index exceeding 40 and 20 respectively and with a PI between 5 and 17. Imported soils shall be maintained within 2 percent of optimum moisture content at time of compaction.

2.02 SOURCE QUALIT□ CONTROL

A. Where imported materials are required, provide materials from same source throughout the project.

B. A change in source requires sampling, testing, and approval by Engineer.

PART 3 EXECUTION

3.01 SITE PREPARATION

A. The subgrade whereon improvements are to be constructed shall be stripped of all vegetation and organic materials and any debris prior to placement of fill materials and compaction.

3.02 TREATMENT OF SUBGRADES

A. In cut areas, excavate and removal soils as needed to meet finished elevations and grades indicated on the drawings. Excess clean soils shall be stockpiled in the locations designated by the wner, if wner agrees to utili□e such, or shall otherwise be properly disposed of.

B. Upon completion of cut, subgrade shall be scarified to a minimum depth of 6-inches and thereafter compacted to a minimum density of 5 percent of maximum density per ASTM D 6 38 at a moisture content of □2 percent of optimum. Subgrade surface shall be proof roll tested in the presence of the Geotechnical Engineer prior to placing new layers.

C. Examination of Subgrade: Do not place materials on prepared subgrade until the subgrade preparation has been accepted by the Engineer. Do not place fill over fro□en or saturated ground.

3.03 PLACING FILL

A. In fill areas, after placement of fill, compact material to a minimum density of 5 percent of maximum density per ASTM D 6 38 at a moisture content of □2 percent of optimum.

B. Attaining Proper Bond: If the compacted surface of a layer is too smooth to bond with succeeding layers, loosen the surface before continuing the work.

C. Place materials to lines and grades shown allowing for depth of base and concrete/asphalt/turf system.

D. Maintain aggregate drainage throughout construction.

E. The material shall be blended sufficiently to secure the best degree of compaction.

3.04 FINAL GRADING

A. Upon completion of the excavation, grading and compaction process, fine grade all surfaced by means of laser grading (or grade using equivalent means) as needed to meet the meet the elevations, lines and grades indicated on the drawings.

3.05 TESTING

A. Compaction Testing: Conduct compaction testing for subgrade soils. Minimum spacing for compaction testing shall be one test per each ten thousand square feet of area compacted. Material shall be compacted to a density of 5 percent of maximum density per ASTM 6 38 at a moisture content of 2 percent of optimum. Areas of the field found not to meet compaction criteria shall be re-worked and/or re-compacted at the Contractors expense until compaction criteria are met. Contractor shall also be responsible for the costs of additional compaction testing.

END OF SECTION

SECTION 31 31 16
TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes soil treatment for termite control.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.

B. Product data and application instructions.

C. Certification that products used comply with U.S. Environmental Protection Agency (EPA) regulations for termiticides.

1.4 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for preparing substrate and application.

B. Engage a professional pest control operator who is licensed according to regulations of governing authorities to apply soil treatment solution. Operator shall be licensed by the Arkansas State Plant Board.

C. Contractor shall provide Arkansas State Plant Board 48 hours advance notice of anticipated application time.
   1. The Contractor shall provide the Architect with a copy of the Arkansas State Plant Board's Notice of Inspection within 48 hours of issuance
      a. Failure to notify the Arkansas State Plant Board and provide the Architect a copv of the Notice of Inspection will result in retreatment at the Contractor's time and expense.
      b. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination" to schedule application of termiticide products.

D. Use only termiticides that bear a federal registration number of the EPA and are approved by local authorities having jurisdiction.

1.5 JOB CONDITIONS

A. Restrictions: Do not apply soil treatment solution until excavating, filling, and grading operations are completed, except as otherwise required in construction operations.

SECTION 31 31 16
TERMITE CONTROL

B. To ensure penetration, do not apply soil treatment to frozen or excessively wet soils or during inclement weather. Comply with handling and application instructions of the soil toxicant manufacturer.

1.6 WARRANTY

A. Warranty: Furnish written warranty, executed by Applicator and Contractor, certifying that applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity is discovered during warranty period, Contractor will re-treat soil and repair or replace damage caused by termite infestation.

B. Warranty Period: 5 years from date of Substantial Completion.

C. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT SOLUTION

A. General: Use an emulsible, concentrated termiticide that dilutes with water, specially formulated to prevent termites infestation. Fuel oil will not be permitted as a diluent. Provide a solution consisting of one of following chemical elements.

B. Products: Subject to compliance with requirements, provide one of the following:
   1. Permathrin:
      a. Dragnet FT, FMC Corp.
      b. Torpedo, ICI Americas, Inc.
   2. Chlordane:
      a. Pryfon-6

C. Dilute with water to concentration level recommended by manufacturer. Provide documentation of recommended dilution rate and verification of dilution used to ensure effectiveness.

D. Other solutions may be used as recommended by Applicator if approved for intended application by local authorities having jurisdiction. Use only soil treatment solutions that are not harmful to plants.

PART 3 - EXECUTION

3.1 APPLICATION

A. Surface Preparation: Remove foreign matter that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and foundations. Toxicants may be applied before placing compacted fill under slabs if recommended by toxicant manufacturer.

B. Application Rates: Apply soil treatment solution as follows:
   1. Overall treatment under slabs at the rate of one gallon per 10 square feet for sand and 1-1/2

gallons in 10 square feet for gravel. Treatment shall be applied prior to placement of any sand cushion, gravel drainage fill, etc. When necessary to insure proper penetration, the ground surface shall be left loose or lightly scarified until treatment has been completed.

2. Treatment of a one-foot strip along critical areas under slab such as on the inside of grade beams or foundation walls, around interior piers and pipes rising from the ground at the rate of two additional gallons per five linear feet. Treatment shall be applied as specified for overall treatment under slabs.
3. Treatment of a one-foot strip along the outside of the foundations of the building at the rate of two gallons per five linear feet. Treatment shall be applied in a trench dug to a depth of approximately 2" below finished grade. Loosen earth in trench to a depth of 12" before treating. This treatment is to be performed prior to finish grading.
4. Provide a 5 year certificate of guarantee to the University.

C. Post signs in areas of application to warn workers that soil termiticide treatment has been applied. Remove signs after areas are covered by other construction.

D. Reapply soil treatment solution to areas disturbed by subsequent excavation, landscape grading, or other construction activities following application.

END OF SECTION

SECTION 31 50 25

EXCAVATION BAC FILLING COMPACTING FOR UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating, trenching, backfilling and compacting for water, sewer, electrical and other buried utility systems and appurtenances.

1.02 REFERENCES

A. ASTM C33--Coarse Aggregates.

B. ASTM D6 38--Test for Moisture-Density Relations of Soils (Modified).

C. ASTM D2487--Classification of Soils for Engineering Purposes.

D. ASTM 2 22--Density of Soil and Soil Aggregate In-Place by Nuclear Methods.

E. ASTM 3017--Moisture Content of Soil and Soil Aggregate In-Place by Nuclear Methods.

F. ASTM D4254--Minimum Index Density and Unit Weight of Soils and Calculations of Relative Density.

G. ASTM D4318--Test for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

. S A-- ccupational Safety and ealth Administration and Related Regulation

1.03 PROTECTION OR REMOVAL OF UTILIT LINE

A. The Contractor shall anticipate all underground obstructions such as, but not limited to, water mains, gas lines, storm and sanitary sewers, telephone or electric light or power ducts, concrete, and debris. Any such lines or obstructions indicated on the Drawings show only the approximate locations and shall be verified in the field by the Contractor. The wner and Engineer will endeavor to familiari e the Contractor with all known utilities and obstructions, but this shall not relieve the Contractor from full responsibility in anticipating all underground obstructions whether or not shown on the Drawings.

B. The Contractor shall, at his own expense, maintain in proper working order and without interruption of service all existing utilities and services which may be encountered in the Work. With the consent of the Engineer and utility owner such service connections may be temporarily interrupted to permit the Contractor to remove designated lines or to make temporary changes in the locations of services. The cost of making any temporary changes shall be at the Contractor's expense.

C. The Contractor shall notify all utility companies which may have buried utilities in the vicinity of the Work to have their utilities located and marked in the field. All underground utilities shall then be uncovered to verify location and elevation before construction begins.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use General Site Fill for properly meeting grading and compaction criteria specified herein.

B. Sand: Sand for utility bedding and pipe □one backfill shall be free from clay lumps, organic and other deleterious material, and have a plasticity index no greater than 12, as determined by ASTM D4318.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Examine utility routes and coordinate excavation work to eliminate installation conflicts.

B. Allow room for stockpiling excavated material and utility construction material during utility construction

3.02 TRENCH EXCAVATION

A. Procedure: Excavated to indicated or specified depths.

1. Excavate by open cut method.
2. Dispose of unacceptable material obtained by trench excavation.
3. During excavation for pipes located outside of field areas, stockpile material suitable for backfilling in an orderly manner far enough from the bank of the trench to avoid overloading, slides, or cave-ins.
4. Grade as necessary to prevent surface water from flowing into trenches or other excavations.
5. Cut banks of trench as nearly vertical as practical. Remove stones as necessary to avoid point-bearing. ver-excavate wet or unstable soil from the trench bottom to permit construction of a more stable bed for pipe. ver excavation shall be filled and tamped with crushed rock or other approved material to the required grade.
6. Excavate the trench the proper width as shown. If the trench width below the top of pipe is wider than specified in this Section or shown, install additional backfill. No additional payment will be made for additional material or work required for installation.
7. Accurately grade the trench bottom to provide proper bedding as required for pipe installation.
8. If any excavation is carried beyond the lines and grades required or authori□ed, the Contractor shall, at his own expense, fill such space with appropriate backfill material as specified in the Contract Documents and as directed by the Engineer.

B. Sheeting and Bracing: Install sheeting and bracing necessary to support the sides of trenches and other excavations with vertical sides, as required by current S A regulations.

C. Water In Excavation: eep Work free from ground or surface water at all times. Provide pumps of adequate capacity or other approved method to remove water from the excavation in such a manner that it will not interfere with the progress of the Work or the proper placing of other Work.

3.03 PIPE BEDDING

A. The pipe □one is defined on the drawings including the pipe bedding, backfill to one-half the pipe diameter (the springline) and the initial backfill to the depth specified above the top of the pipe.

1. Accurately grade the bottom of the trench 4 inches below the bottom of the pipe and to the limits of the clear space on either side of the pipe.
2. Place a minimum of 4 inches of compacted granular embedment material below the pipe and 6 inches above the top of the pipe.

3. The initial layer of embedment material placed to receive the pipe shall be brought up to a grade slightly higher than that required for the bottom of the pipe and the pipe shall be placed thereon and brought to grade by tamping, or by removal of the slight excess amount of embedment under the pipe.
4. Adjustment to grade line shall be made by scraping away or filling with embedment materials. Wedging or blocking up of pipe will not be permitted.
5. Each pipe section shall have a uniform bearing on the embedment for the full length of the pipe, except immediately at the joint.
6. After each pipe has been graded, aligned, placed in final position on the bedding material and joint made, sufficient embedment material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof to hold the pipe in proper position and alignment during subsequent pipe jointing and embedment operations.
7. Embedment material shall be deposited simultaneously on each side of pipe and compacted uniformly to the elevation shown on the plans. Class I crushed aggregate may be dumped and Class II GW or GP soils may be dumped and compacted to 40 percent relative density per ASTM D4254. Embedment material shall be shovel sliced, tamped or vibrated to obtain a good bearing surface under the pipe haunch.
8. Sheeting and shoring will not be allowed in the pipe □one during or after installation of the pipe or embedment material, unless special provisions are made to ensure the specified compaction of bedding and pipe alignment is maintained after removal of sheeting and shoring.

3.04 UTILIT□ INSTALLATION

A. Provide a minimum cover over the top of the pipe as indicated. Provide class of bedding as shown. Install piping and appurtenances as specified.

B. Excavation for Appurtenances: Excavate sufficiently for valves and similar structures to leave at least 2 feet clear between the outer surfaces and the embankment or timber that may be used to hold and protect the banks. Any over-depth excavation below such appurtenances not directed will be considered unauthori□ed and will be refilled with concrete, as directed by the Engineer, at no additional cost to the wner.

3.05 BAC FILLING

A. Backfill trenches to ground surface or bottom of subbase in paved areas with material as specified. Reopen trenches improperly backfilled to depth required for proper compaction. Refill and compact as specified, or otherwise correct the condition in an approved manner.

1. Above the pipe □one, deposit Earthen Backfill material per Section 3100 10 of the specifications in 8-inch lifts. Mound excess material over trench. Earthen Backfill material shall be compacted to a minimum of 5 percent of maximum relative density according to ASTM D 6 38.
2. All forms, lumber, trash and debris shall be removed from trenches, and other utility structures. Backfill for utility pull boxes and other utility structures shall be placed in accordance with applicable Specification Sections.

3.06 DISPOSAL OF EXCESS MATERIAL

A. Remove waste and excess excavated material from the construction site before final inspection. Legally dispose of material at a licensed site or with written and notari□ed permission from the property owner for a private disposal site. All cost associated with waste material removal and disposal shall be paid for by the Contractor.

END OF SECTION

SECTION 32 12 06 - BASE COURSE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Aggregate base for asphaltic concrete and Portland cement concrete paving including sand/shell base and hot-mix sand asphalt base.

B. Related Sections
   1. Section 312000 – Earthwork

1.2 REFERENCES

A. Asphalt Institute

B. State Highway Department Standard Specifications

1.3 QUALITY ASSURANCE

A. An independent testing laboratory, selected and paid by Contractor, will be retained to perform construction testing of in-place base course for compliance with requirements for thickness, compaction, density, and tolerances. Paving base course tolerances shall be verified by rod and level readings on not more than 50-foot centers to be not more than 0.05-feet above design elevation which will allow for paving thickness as shown on Construction Drawings. Contractor shall provide instruments and suitable benchmark.

1.4 SUBMITTALS

A. Submit materials certificate to the independent testing laboratory that is signed by materials producer and Contractor, certifying that materials comply with, or exceed, requirements specified herein or on the Construction Drawings.

B. Submit certification of base course materials and placement as specified in Parts 2 and 3 hereinafter.

1.5 WEATHER LIMITATIONS

A. Do not place aggregate when base surface temperature is less than 40 degrees F, nor when air temperature is below 45 degrees F. Do not place aggregate when surface is wet or frozen. Do not place aggregate when weather conditions are unfavorable otherwise.

PART 2 - PRODUCTS

2.1 BASE COURSE MATERIAL

A. Aggregate Base Course: Aggregate base course shall consist of a well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction. Base course may consist of a granular base (crushed slag, stone, or gravel, etc), sand/shell base material, or a hot-mix sand asphalt base.

B. Base course shall be as shown on the drawings, or when not shown, shall be as specified herein.

C. Aggregate base material requirements from State or other local highway agency specifications may be use for aggregate base course for roads, streets, or similar use pavements if the following conditions are met:
   1. Percentage of material by weight passing the No. 200 sieve will not exceed 10.
   2. Portion of the material passing the No. 40 sieve must have a liquid limit not greater than 25 and a plasticity index not greater than 5.

D. Aggregate shall consist of clean, sound, durable particles of crushed stone, crushed slag, crushed gravel, angular sand, or other approved material. Aggregate shall be free of lumps of clay, organic matter, and other objectionable materials or coatings. The portion retained on the No. 4 sieve shall be known as coarse aggregate; that portion passing the No. 4 sieve shall be known as fine aggregate.
   1. Coarse aggregates shall be angular particles of uniform density.
   2. Fine aggregates shall be angular particles of uniform density. Fine aggregate shall consist of screenings, angular sand, crushed recycled concrete fines, or other finely divided mineral matter processed or naturally combined with the coarse aggregate.

E. Gradation: The specified gradation requirements shall apply to the completed base course. The aggregates shall have a maximum size of 2 inches and shall be continuously well graded within the following limits:

GRADATION OF AGGREGATES
Percentage by Weight Passing Square-Mesh Sieve

Sieve Designation	No. 2	No. 3	No. 1
2 inch	100		----
1-1/2 inch			70-100
1 inch	45-80		60-100
1/2 inch	30-60		30-65
No. 4	20-50		20-50
No. 10	15-40		15-40
No. 40	5-25		5-25
No. 200	0-10		0-10

NOTE: Particles having diameters less than 0.0008 inch shall not be in excess of 3 percent by weight of the total sample tested.

F. Hot-mix Sand Asphalt Bases: Asphalt Institute Type VI, VII, or VIII Mixes for Hot-mix Sand Asphalt Bases. Hot-Mix base shall be used only under asphaltic concrete surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall verify to the Owner in writing that the subgrade has been inspected, tested, and gradients and elevations are correct, dry, and properly prepared in accordance with Section 02300.

3.2 CONSTRUCTION

A. Perform base course construction in accordance with the applicable State standard specifications or as shown or specified.

B. Perform base course construction in a manner that will drain the surface properly and prevent runoff from adjacent areas from draining onto base course construction.

C. Compact base material to not less than 95 percent of optimum density, as determined by ASTM D 698 unless otherwise indicated on the Drawings.

D. Construct to thickness indicated on Construction Drawings.
   1. Granular Base: Apply in lifts or layers not exceeding 8-inches, measured loose.
   2. Sand/Shell Base: Apply in lifts or layers not exceeding 4-inches, measured loose.
   3. Hot-mix Sand Asphalt Bases: Apply in lifts or layers not exceeding 3-inches, measured loose.

3.3 FIELD QUALITY CONTROL

A. Field testing specified below will be performed by the Contractor's Independent Testing Laboratory at no cost to the Owner.

B. Field testing, frequency, and methods may vary as determined by and between the Contractor and the Contractor's Testing Laboratory.

C. Field density tests for in-place materials will be performed in accordance with the following:
   1. Nuclear Method: ASTM D 2922 (Method B-Direct Transmission)
   2. Base material thickness: One test for each 20,000 sq. ft. of in-place base material area.
   3. Base material compaction: One test in each lift for each 20,000 sq. ft. of in-place base material area.

D. The independent testing laboratory will prepare reports that indicate test location, elevation data, and test results. Owner and Contractor shall be provided with copies of the reports within 96 hours of the time the test was performed. In the event that the test results show failure to meet any of the Specifications; Owner and Contractor will be notified immediately by the independent testing laboratory.

E. The Contractor shall certify in writing to the Owner that base course placement is in accordance with specification requirements prior to subsequent work thereon.

F. The Contractor shall pay for retesting due to failures at no additional expense to Owner. Contractor shall provide free access to the site for testing activities.

END OF SECTION

SECTION 32 12 16 - ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 WORK INCLUDED

A. Prepare subgrade to receive base course.

B. Provide compacted base course.

C. Place base course and place asphaltic concrete hot mix (ACHM) binder course.

D. Tack base course and place ACHM surface course.

1.3 RELATED WORK

A. Section 312000 - Earthwork

B. Section 334100 - Storm Drainage

C. Section 02528 - Concrete Curb and Gutters

D. Section 033000 - Cast in Place Concrete

1.4 REFERENCES

A. Arkansas State Highway and Transportation Dept. (AHTD):

1. Standard Specifications for Highway Construction, Edition of 2003, hereafter referred to as "AHTD Standard Specifications".

PART 2 - PRODUCTS

2.1 BASE COURSE MATERIALS

A. Crushed Stone: Class 7, meeting the requirements of section 303 of the AHTD Standard Specifications, or approved equal.

B. Tack Coat: Shall be applied as specified and meeting the requirements of section 401 of the AHTD Standard Specifications.

2.2 ASPHALT PAVEMENT MATERIALS

A. ACHM Surface Course:

1. Type 2 mix as described in Sections 407 and 409 of the AHTD Standard Specifications.
2. The surface course shall be composed of a mixture of mineral aggregate and asphalt cement in the proportions by weight for the type mixture designated.

B. ACHM Binder Course:

1. Type 2 mix as described in Sections 405 and 409 of the AHTD Standard Specifications.
2. The base course shall be composed of a mixture of mineral aggregate and asphalt cement in the proportions by weight for the type mixture designated.

PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION

A. Ensure grading of the subgrade to the required elevation.

B. Scarify to a depth of six inches the subgrade where the base course is to be placed.

C. Water and thoroughly mix subgrade until optimum moisture content is obtained when deficiency of moisture content exists. When excess of moisture exists, rework and aerate subgrade until optimum moisture content is obtained.

D. Re-compact the subgrade to not less than 98 percent of optimum density as determined by ASTM D 698 or 95 percent of optimum density, as determined by ASTM D 1557 unless otherwise indicated on the Drawings.

E. Before final rolling, shape the entire area to the required cross section, adding additional subsoil as required and compact the subgrade surface to the required density.

3.2 PLACEMENT OF BASE COURSE

A. Place the crushed stone base material over the prepared subgrade in accordance with the construction methods described in section 303 of the AHTD Standard Specifications.

B. Place the crushed stone base material over the prepared building pad at 4 inches in depth. The building slab will be placed over the compacted base material.

C. Add water during compaction to bring the base course materials to optimum moisture content. When an excess moisture exists, rework the base course materials until optimum moisture content is obtained.

D. Compact the base course to not less than 95 percent of optimum density, as determined by ASTM D 1557 unless otherwise indicated on the Drawings.

3.3 PLACING TACK COATS

A. Apply the bituminous tack coat to the prepared base at the rate of 0.03 gallon to 0.10 gallon per square yard as designated by the Architect/ Engineer.

B. Clean the base course surface and place the tack coats in accordance with the requirements of section 401 of the AHTD Standard Specifications.

3.4 PLACING ACHM SURFACE COURSE

A. Construction Methods: Section 410, AHTD Standard Specifications.

B. Temperature range of mix:

1. When discharged from mixer: 285 degrees F. to 325 degrees F.
2. When placed on base course: 275 degrees F. 325 degrees F.

C. Temperature of air: Do not place ACHM when air temperature in the shade is below 40 degrees F.

D. Place asphalt pavement to compacted depth shown on Drawing.

E. Compact to required density, with approved rolling equipment. Start compaction as soon as pavement will bear equipment without checking or undue displacement.

F. Required density: 92 percent of maximum theoretical density.

G. Carry out compaction in three operations in pass sequence. Ensure each pass of roller overlaps previous passes to ensure smooth surface free of roller marks. Keep roller wheels sufficiently moist so as not to pick up material.

H. Perform hand tamping in areas not accessible to rolling equipment.

I. Ensure joints made during paving operations and at connection to existing pavement are straight, clean vertical and free of broken or loose material.

J. Ensure surface of completed asphalt pavement is true to lines, profiles and elevations indicated, and is free from depressions exceeding 1/4 inch when measured with a 10 foot straight-edge.

K. Do not allow vehicular traffic on newly paved areas until surface has cooled to atmospheric temperature.

3.5 FIELD QUALITY CONTROL

A. Testing laboratory will make in-place tests of density and moisture content of the subgrade and the base course in accordance with ASTM D 2922-78.

B. Testing laboratory will make density tests of compacted asphalt paving in accordance with ASTM D 107-76.

END OF SECTION

SECTION 32 13 13 - PORTLAND CEMENT CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

1.2 Section Includes

1. Preparation and placement of Portland cement concrete parking areas.
2. Preparation and placement of Portland cement concrete roads and entrances.

1.3 Related Sections

1. Section 312000 - Earthwork
2. Section 321206 - Base Course
3. Section 321313 - Pavement Markings

1.4 REFERENCS

A. American Concrete Institute (ACI)

1. ACI 301 -Structural Concrete for Buildings.
2. ACI 305R - Hot Weather Concreting
3. ACI 306R - Standard Specification for Cold Weather Concreting
4. ACI 308 - Standard Practice for Curing Concrete

B. American Society for Testing and Materials (ASTM)

1. ASTM A185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
2. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement
3. ASTM C 31 - Test Methods of Making and Curing Concrete Test Specimens in the Field.
4. ASTM C33 - Concrete Aggregates
5. ASTM C 39 - Test Method for Comprehensive Strength of Cylindrical Concrete Specimens.
6. ASTM C42 - Obtaining And Testing Drilled Cores And Sawed Beams Of Concrete
7. ASTM C94 - Ready-Mixed Concrete
8. ASTM C 138 - Test Method for Unit Weight, Yield, and Air Content (Gravemetric) of Concrete.
9. ASTM C143 - Method for Slump of Hydraulic Cement Concrete
10. ASTM C150 - Portland Cement
11. ASTM C 172 - Method of Sampling Freshly Mixed Concrete.
12. ASTM C231 - Air-Content of Freshly Mixed Concrete by the Pressure Method
13. ASTM C260 - Air-Entraining Admixtures for Concrete
14. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete
15. ASTM C920 - Standard Specification for Elastomeric Joint Sealants
16. ASTM C1064 - Temperature Of Freshly Mixed Portland Concrete Cement
17. ASTM D994 - Preformed Expansion Joint Filler for Concrete (Bituminous)
18. ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
19. ASTM D2628 - Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements

C. Federal Specifications (FS)
   1. FS HH-F-341 - Fillers, Expansion Joint: Bituminous (Asphalt & Tar)

D. State Highway Department Standard Specifications

1.5 QUALITY ASSURANCE

A. Establish and maintain required lines and elevations.

B. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable paving as directed by Owner.

1.6 SUBMITTALS

A. Submit certified laboratory test data or manufacturer's certificates and data for the items listed below certifying that materials are in conformance requirements specified herein. Submit to the Engineering Consultant of Record and the Independent Testing Laboratory for review and approval and within 7 calendar days after receipt of Notice-to-Proceed.
   1. Portland cement concrete mix
   2. Aggregate gradations
   3. Preformed expansion joint filler
   4. Field molded/poured sealant
   5. Dowel bars
   6. Expansion sleeves
   7. Tie bars
   8. Reinforcing steel bars
   9. Welded wire fabric
   10. Air entraining admixtures
   11. Water-reducing and set-retarding admixtures (if used)

B. Submit certification that joint sealant has been installed in accordance with the manufacturer's instructions. Include copy of written instructions.

1.7 PROJECT CONDITIONS

A. Maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize temporary striping, flagmen, barricades, warning signs, and warning lights as required.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete: Mix concrete and deliver in accordance with ASTM C94.
   1. Design mix shall produce normal weight concrete consisting of Portland cement, aggregate, water-reducing admixture, air-entraining admixture, and water to produce following:
      a. Compressive Strength: 4,000 psi, minimum at 28 days, unless otherwise indicated on Construction Drawings.
      b. Slump Range: 1"-3" for hand placed concrete, 1-1/4" to 3" for machine placed (slipform) concrete

c. Air Entrainment: 5 to 7 percent

B. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. Coat forms with nonstaining type of coating that will not discolor or deface surface of concrete.

C. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A185. Furnish in flat sheets.

D. Reinforcing Bars: Deformed steel bars, ASTM A615, Grade 60.

E. Portland Cement: ASTM C150, Type I

F. Joint Fillers: Resilient premolded bituminous impregnated fiberboard units complying with ASTM D994, D1751, D2628; FS HH-F-341, Type II, Class A.

G. Joint Sealants: ASTM C920, non-priming, pourable, self-leveling polyurethane.
1. Acceptable sealants include Sonneborn “SL1”, Sonneborn "SL2", Sonneborn “Sonomeric 1”, Sonneborn “Sonomeric 2”, Mameco "Vulkem 245", or Woodmont Products "Chem-Caulk".

H. Aggregate: ASTM C33.

I. Water: Clean and potable

J. Dowel Bars: ASTM A615, grade 60, and plain steel bars.

K. Air Entraining Mixture: ASTM C260, Sika AER by Sika Corporation or Air Mix by the Euclid Chemical Corporation.

L. Curing Compound: ASTM C309, Hydrocide by Sonneborn of Rexnord Chemical Products, Inc. or Polyseal 4 in 1 by Chem Masters Corporation.

M. Joint Backup Rods: CCEVA Rod 100 by E-Poxy Industrials, Inc., or Sealtight BACKER ROPE by W.R. Meadows, Inc.

PART 3 - EXECUTION

3.1 PREPARATION

A. Proofroll prepared base material surface to check for unstable areas in accordance with Section 312000 including documentation and re-proof rolling as required. Paving work shall begin only after unsuitable areas have been corrected and are ready to receive paving.

B. Remove loose material from compacted base material surface to produce firm, smooth surface immediately before placing concrete.

3.2 INSTALLATION

A. Form Construction
   1. Set forms to required grades and lines, rigidly braced and secured.
   2. Install sufficient quantity of forms to allow continuance of work and so that forms remain in place minimum of 24 hours after concrete placement.
   3. Check completed formwork for grade and alignment to following tolerances:
      a. Top of forms not more than 1/8-inch in 10'-0".
      b. Vertical face on longitudinal axis, not more than1/4-inch in 10'-0".
   4. Clean forms after each use and coat with form release agent as often as required to ensure separation from concrete without damage.

B. Reinforcement: Fasten reinforcing bars or welded wire fabric (if required) accurately and securely in place with suitable supports and ties. Remove from reinforcement all dirt, oil, loose mill scale, rust, and other substances that will prevent proper bonding of the concrete to the reinforcement.

C. Concrete Placement
   1. Concrete may be mixed and placed when the air temperature in the shade and away from artificial heat is a minimum of 35 degrees F and rising. Hot and cold weather concreting shall be in accordance with ACI 305R and 306R, respectively.
   2. Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Concrete shall not be placed around manholes or other structures until they are at required finish elevation and alignment.
   3. Place concrete using methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.
   4. Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2 hour, place construction joint.

D. Joint Construction: Construct expansion, weakened-plane control (contraction), and construction joints straight with face perpendicular to concrete surface. Construct transverse joints perpendicular to centerline, unless otherwise detailed.
   1. Weakened-Plane Control or Contraction Joints: Provide joints at spacing of 15'-0" on centers, maximum each way. Construct control joints for depth equal to at least 1/4 of the concrete thickness, as follows:
      a. Form tooled joints in fresh concrete by grooving top with recommended tool and finishing edge with jointer.
      b. Form sawed joints using powered saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action.
   2. Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for period of more than 1/2 hour, except where such placements terminate at expansion joints. Construct joints in accordance with standard details.
   3. Transverse Expansion Joints: Locate expansion joints at maximum of 180'-0" on centers, maximum each way unless otherwise shown on the Construction Drawings. Pro-

vide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, sidewalks, and other fixed objects.

4. Butt Joints: For joints against existing pavement, place 16” long dowels eight inches into holes drilled into center of existing slab. Epoxy dowels into holes with approved epoxy compound. Place dowels prior to concrete placement for new concrete. Dowel spacing to be 24” on center unless otherwise shown on Construction Drawings. Saw joint and fill with joint sealer.

E. Joint Fillers: Extend joint fillers full-width and depth of joint, and not less than 1/2-inch or more than 1-inch below finished surface where joint sealer is indicated. Furnish joint fillers in 1-piece lengths for full width being placed, wherever possible. Where more than 1 length is required, lace or clip joint filler sections together.

F. Joint Sealants: Joints shall be sealed with approved exterior pavement joint sealants and shall be installed in accordance with manufacturer's recommendations.

3.3 CONCRETE FINISHING

A. After striking off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture. After floating, test surface for trueness with 10'-0" straightedge. Distribute concrete as required to remove surface irregularities and refloat repaired areas to provide continuous smooth finish.

B. Work edges of slabs and formed joints with edging tool, rounding edge to 1/2-inch radius. Eliminate tool marks on concrete surface. After completion of floating and troweling, when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:

1. Inclined Slab Surfaces: Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to flow of traffic so as to produce regular corrugations not over 1/16 of an inch deep.
2. Paving: Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to flow of traffic so as to produce regular corrugations not over 1/16 of an inch deep.

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

D. Protect and cure finished concrete paving using either membrane curing compound or moist-curing methods described in "water-curing" section of ACI 308.

3.4 CLEANING AND ADJUSTING

A. The Contractor shall certify in writing that placement is in accordance with specification requirements.

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

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

3.5 FIELD QUALITY CONTROL

A. Field quality control tests specified herein will be conducted by the Contractor's Independent Testing Laboratory at no cost to the Owner in accordance with Section 01458. The Contractor shall perform additional testing as considered necessary by the Contractor for assurance of quality control. Retesting required as a result of failed initial tests shall be at the Contractor's expense.

B. Field testing, frequency, and methods may vary as determined by and between the Contractor and the Contractor's Testing Laboratory.

C. Review the Contractor's proposed materials and mix design for conformance with specifications.

D. Perform testing in accordance with ACI 301 and testing standards listed herein.

E. Strength Tests:
   1. Secure composite samples in accordance with ASTM C 172. Sample at regularly spaced intervals from middle portion of the batch. Sampling time shall not exceed 15 minutes.
   2. Mold and cure specimens in accordance with ASTM C 31.
      a. A minimum of four concrete test cylinders shall be taken for every 100 cubic yards or less of each class of concrete placed each day and not less than once for each 5000 square feet of paved area.
      b. During the initial 24 hours (plus or minus 8 hours) after molding, the temperature immediately adjacent to the specimens shall be maintained in the range of 60 to 80 degrees F. Control loss of moisture from the specimens by shielding from the direct rays of the sun and from radiant heating devices.
      c. Specimens transported prior to 48 hours after molding shall not be demolded, but shall continue initial curing at 60 to 80 degrees F until time for transporting.
      d. Specimens transported after 48 hours age shall be demolded in 24 hours (plus or minus 8 hours). Curing shall then be continued but in saturated limewater at 73.4 degrees (plus or minus 3 degrees F) until the time of transporting.
      e. Wet cure cylinders under controlled temperature until testing.
   3. Test cylinders in accordance with ASTM C 39.
      a. Date test cylinders and number consecutively. Give each cylinder of each set an identifying letter (i.e. A, B, C, D). Prepare a sketch of the building plan for each test set identifying location of placed concrete.
      b. Test one cylinder (A) at 7 days for information. If the compressive strength of the concrete sample is equal to or above the 28 day specified strength, test another cylinder (B) at 7 days. The average of the breaks shall constitute the compressive strength of the concrete sample.
      c. Test two cylinders (B and C) at 28 days and the average of the breaks shall constitute the compressive strength of the concrete sample.

d. Retain fourth cylinder (D) for further testing if needed, but do not retain cylinder more than 60 days.

4. Evaluation and Acceptance:
   a. Strength level of concrete will be considered satisfactory if the average of all sets of three consecutive strength tests equal or exceed specified strength and no individual strength test (average of two cylinders) results are below specified compressive strength by more than 500 psi.
   b. Complete concrete work will not be accepted unless requirements of ACI 301, have been met, including dimensional tolerances, appearance, and strength of structure.
   c. Where average strength of cylinders, as shown by tests is not satisfactory, Owner reserves the right to require Contractor to provide improved curing conditions of temperature and moisture to secure required strength. If average strength of laboratory control cylinders should fall so low as to cause portions of structure to be in question by Owner, follow core procedure set forth in ASTM C42. If results of core test indicate, in opinion of Owner, that strength of structure is inadequate, provide without additional cost to Owner, replacement, load testing, or strengthening as may be ordered by Owner. If core tests are so ordered and results of such tests disclose that strength of structure is as required, cost of test will be paid by Owner.

F. Slump Test: Conduct slump test for each cylinder set taken in accordance with ASTM C 143. Make additional slump tests for every other load from a stationary mixer or truck to test consistency. Sampling shall be in accordance with ASTM C 172.

G. Air Content: Conduct air content test for each cylinder set for concrete exposed to freeze-thaw in accordance with ASTM C 231, ASTM C 173, or ASTM C 138. Indicate test method on report. Make test at same time as slump test.

H. Unit Weight: ASTM C 138.

I. Temperature Test: Conduct temperature test for each cylinder set taken in accordance with ASTM C 1064. Test hourly when air temperature is 40 F and below or 80 F and above. Determine temperature of concrete sample and ambient air for each strength test.

J. In addition to required information noted previously in this Section, record the following information on concrete compression reports:
   1. Test cylinder number and letter.
   2. Specific foundations or structures covered by this test.
   3. Proportions of concrete mix or mix identification.
   4. Maximum size coarse aggregate.
   5. Specified compressive strength.
   6. Tested compressive strength.
   7. Slump, air-content (when applicable) and concrete temperature.
   8. Concrete plastic unit weight.
   9. Concrete Temperature.
   10. Elapsed time from batching at plant to discharge from delivery truck at project.
   11. Date and time concrete was placed.
   12. Ambient temperature, wind speed, and relative humidity during concrete placement.

13. Name of technician securing samples.
14. Curing conditions for concrete strength test specimens (field and laboratory).
15. Date strength specimens transported to laboratory.
16. Age of strength specimens when tested.
17. Type of fracture during test.

K. At the start of each day's mixing, report any significant deviations from approved mix design including temperature, moisture and condition of aggregate.

L. Certify each delivery ticket of concrete. Report type of concrete delivered, amount of water added and time at which cement and aggregate were loaded into truck, and time at which concrete was discharged from truck

M. In Place Pavement Testing: The Contractor's Independent Testing Laboratory will randomly core pavement at minimum rate of 1 core per 20,000 sq. ft of pavement, with minimum of 3 cores from heavy-duty areas and 3 cores from light duty areas. Cores will be sampled and tested in accordance with ASTM C 42. Core will be tested for thickness and quality of aggregate distribution. Core holes shall be patched by the Contractor immediately with Portland cement concrete and shall be finished to provide level surface as specified herein.

N. Additional Tests: Additional in-place tests shall be conducted as directed by the Owner when specified concrete strengths and other characteristics have not been attained in the structures.

END OF SECTION