RENOVATIONS FOR

FAIRGROVE LIFE HOUSES

1209 AND 1211 FAIRGROVE CHURCH ROAD SE, CONOVER

CITY OF HICKORY, NORTH CAROLINA

DATE: OCTOBER 18, 2019

CBSA PROJECT NO. 2019.014
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1209 AND 1211 FAIRGROVE CHURCH ROAD SE, CONOVER  
CITY OF HICKORY, NORTH CAROLINA  
CBSA Project No. 2019.014

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GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN STATE CONSTRUCTION CONTRACTS

In accordance with G.S. 143-128.2 (effective January 1, 2002) these guidelines establish goals for minority participation in single-prime bidding, separate-prime bidding, construction manager at risk, and alternative contracting methods, on State construction projects in the amount of $300,000 or more. The legislation provides that the State shall have a verifiable ten percent (10%) goal for participation by minority businesses in the total value of work for each project for which a contract or contracts are awarded. These requirements are published to accomplish that end.

SECTION A: INTENT
It is the intent of these guidelines that the State of North Carolina, as awarding authority for construction projects, and the contractors and subcontractors performing the construction contracts awarded shall cooperate and in good faith do all things legal, proper and reasonable to achieve the statutory goal of ten percent (10%) for participation by minority businesses in each construction project as mandated by GS 143-128.2. Nothing in these guidelines shall be construed to require contractors or awarding authorities to award contracts or subcontracts to or to make purchases of materials or equipment from minority-business contractors or minority-business subcontractors who do not submit the lowest responsible, responsive bid or bids.

SECTION B: DEFINITIONS

1. Minority - a person who is a citizen or lawful permanent resident of the United States and who is:
   a. Black, that is, a person having origins in any of the black racial groups in Africa;
   b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
   c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
   d. American Indian, that is, a person having origins in any of the original peoples of North America; or
   e. Female

2. Minority Business - means a business:
   a. In which at least fifty-one percent (51%) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and
   b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

3. Socially and economically disadvantaged individual - means the same as defined in 15 U.S.C. 637. “Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities”. “Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged”.

4. Public Entity - means State and all public subdivisions and local governmental units.

5. Owner - The State of North Carolina, through the Agency/Institution named in the contract.

6. Designer – Any person, firm, partnership, or corporation, which has contracted with the State of North Carolina to perform architectural or engineering, work.

7. Bidder - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.
8. **Contract** - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.

9. **Contractor** - Any person, firm, partnership, corporation, association, or joint venture which has contracted with the State of North Carolina to perform construction work or repair.

10. **Subcontractor** - A firm under contract with the prime contractor or construction manager at risk for supplying materials or labor and materials and/or installation. The subcontractor may or may not provide materials in his subcontract.

**SECTION C: RESPONSIBILITIES**

1. **Office for Historically Underutilized Businesses, Department of Administration** (hereinafter referred to as HUB Office).

   The HUB Office has established a program, which allows interested persons or businesses qualifying as a minority business under G.S. 143-128.2, to obtain certification in the State of North Carolina procurement system. The information provided by the minority businesses will be used by the HUB Office to:
   a. Identify those areas of work for which there are minority businesses, as requested.
   b. Make available to interested parties a list of prospective minority business contractors and subcontractors.
   c. Assist in the determination of technical assistance needed by minority business contractors.

   In addition to being responsible for the certification/verification of minority businesses that want to participate in the State construction program, the HUB Office will:
   (1) Maintain a current list of minority businesses. The list shall include the areas of work in which each minority business is interested.
   (2) Inform minority businesses on how to identify and obtain contracting and subcontracting opportunities through the State Construction Office and other public entities.
   (3) Inform minority businesses of the contracting and subcontracting process for public construction building projects.
   (4) Work with the North Carolina trade and professional organizations to improve the ability of minority businesses to compete in the State construction projects.
   (5) The HUB Office also oversees the minority business program by:
      a. Monitoring compliance with the program requirements.
      b. Assisting in the implementation of training and technical assistance programs.
      c. Identifying and implementing outreach efforts to increase the utilization of minority businesses.
      d. Reporting the results of minority business utilization to the Secretary of the Department of Administration, the Governor, and the General Assembly.

2. **State Construction Office**

   The State Construction Office will be responsible for the following:
   a. Furnish to the HUB Office a **minimum of twenty-one** days prior to the bid opening the following:
      (1) Project description and location;
      (2) Locations where bidding documents may be reviewed;
      (3) Name of a representative of the owner who can be contacted during the advertising period to advise who the prospective bidders are;
      (4) Date, time and location of the bid opening.
      (5) Date, time and location of prebid conference, if scheduled.
   b. Attending scheduled prebid conference, if necessary, to clarify requirements of the general statutes regarding minority-business participation, including the bidders' responsibilities.
c. Reviewing the apparent low bidders' statutory compliance with the requirements listed in the proposal, that must be complied with, if the bid is to be considered as responsive, prior to award of contracts. The State reserves the right to reject any or all bids and to waive informalities.
d. Reviewing of minority business requirements at Preconstruction conference.
e. Monitoring of contractors’ compliance with minority business requirements in the contract documents during construction.
f. Provide statistical data and required reports to the HUB Office.
g. Resolve any protest and disputes arising after implementation of the plan, in conjunction with the HUB Office.

3. Owner

Before awarding a contract, owner shall do the following:

a. Develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and non-minority businesses.
b. Attend the scheduled prebid conference.
c. At least 10 days prior to the scheduled day of bid opening, notify minority businesses that have requested notices from the public entity for public construction or repair work and minority businesses that otherwise indicated to the Office for Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:
   1. A description of the work for which the bid is being solicited.
   2. The date, time, and location where bids are to be submitted.
   3. The name of the individual within the owner’s organization who will be available to answer questions about the project.
   4. Where bid documents may be reviewed.
   5. Any special requirements that may exist.
d. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.
e. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
f. Review, jointly with the designer, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) – (i.e. bidders’ proposals for identification of the minority businesses that will be utilized with corresponding total dollar value of the bid and affidavit listing good faith efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award to the State Construction Office.
g. Evaluate documentation to determine good faith effort has been achieved for minority business utilization prior to recommendation of award to State Construction Office.
h. Review prime contractors’ pay applications for compliance with minority business utilization commitments prior to payment.
i. Make documentation showing evidence of implementation of Owner’s responsibilities available for review by State Construction Office and HUB Office, upon request.

4. Designer

Under the single-prime bidding, separate prime bidding, construction manager at risk, or alternative contracting method, the designer will:

a. Attend the scheduled prebid conference to explain minority business requirements to the prospective bidders.
b. Assist the owner to identify and notify prospective minority business prime and subcontractors of potential contracting opportunities.
c. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
d. Review jointly with the owner, all requirements of G.S. 143-128.2(c) and G.S.143-128.2(f) – (i.e. bidders’ proposals for identification of the minority businesses that will be utilized with
corresponding total dollar value of the bid and affidavit listing Good Faith Efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award.

e. During construction phase of the project, review “MBE Documentation for Contract Payment” – (Appendix E) for compliance with minority business utilization commitments. Submit Appendix E form with monthly pay applications to the owner and forward copies to the State Construction Office.

f. Make documentation showing evidence of implementation of Designer’s responsibilities available for review by State Construction Office and HUB Office, upon request.

5. **Prime Contractor(s), CM at Risk, and Its First-Tier Subcontractors**

Under the single-prime bidding, the separate-prime bidding, construction manager at risk and alternative contracting methods, contractor(s) will:

a. Attend the scheduled prebid conference.

b. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.

c. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification will include the following:

   1. A description of the work for which the subbid is being solicited.
   2. The date, time and location where subbids are to be submitted.
   3. The name of the individual within the company who will be available to answer questions about the project.
   4. Where bid documents may be reviewed.
   5. Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.

   If there are more than three (3) minority businesses in the general locality of the project who offer similar contracting or subcontracting services in the specific trade, the contractor(s) shall notify three (3), but may contact more, if the contractor(s) so desires.

d. During the bidding process, comply with the contractor(s) requirements listed in the proposal for minority participation.

e. Identify on the bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

f. Make documentation showing evidence of implementation of PM, CM-at-Risk and First-Tier Subcontractor responsibilities available for review by State Construction Office and HUB Office, upon request.

g. Upon being named the apparent low bidder, the Bidder shall provide one of the following: (1) an affidavit (Affidavit C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal; (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.

h. The contractor(s) shall identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values. The schedule of values shall be provided as required in Article 31 of the General Conditions of the Contract to facilitate payments to the subcontractors.

i. The contractor(s) shall submit with each monthly pay request(s) and final payment(s), “MBE Documentation for Contract Payment” – (Appendix E), for designer’s review.

j. During the construction of a project, at any time, if it becomes necessary to replace a minority business subcontractor, immediately advise the owner, State Construction Office, and the Director of the HUB Office in writing, of the circumstances involved. The prime contractor shall make a good faith effort to replace a minority business subcontractor with another minority business subcontractor.
k. If during the construction of a project additional subcontracting opportunities become available, make a good faith effort to solicit subbids from minority businesses.

l. It is the intent of these requirements apply to all contractors performing as prime contractor and first tier subcontractor under construction manager at risk on state projects.

6. Minority Business Responsibilities
While minority businesses are not required to become certified in order to participate in the State construction projects, it is recommended that they become certified and should take advantage of the appropriate technical assistance that is made available. In addition, minority businesses who are contacted by owners or bidders must respond promptly whether or not they wish to submit a bid.

**SECTION 4: DISPUTE PROCEDURES**
It is the policy of this state that disputes that involves a person's rights, duties or privileges, should be settled through informal procedures. To that end, minority business disputes arising under these guidelines should be resolved as governed under G.S. 143-128(g).

**SECTION 5**: These guidelines shall apply upon promulgation on state construction projects. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: www.nc-sco.com

**SECTION 6**: In addition to these guidelines, there will be issued with each construction bid package provisions for contractual compliance providing minority business participation in the state construction program.
MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

APPLICATION:

The Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: http://www.nc-sco.com

MINORITY BUSINESS SUBCONTRACT GOALS:

The goals for participation by minority firms as subcontractors on this project have been set at 10%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts or affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal.

OR

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.

OR

Provide Affidavit B, which includes sufficient information for the State to determine that the bidder does not customarily subcontract work on this type project.

The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.
MINIMUM COMPLIANCE REQUIREMENTS:

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the State for performance of this contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business Guidelines shall constitute a breach of the contract. A finding by the State that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the State whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the State will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

1. Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.

2. Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.

3. Breaking down or combining elements of work into economically feasible units to facilitate minority participation.

4. Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.

5. Attending any prebid meetings scheduled by the public owner.

6. Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.

7. Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.

8. Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.

9. Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.

10. Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.
APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: ________________________________________________________________

Address & Phone: ________________________________________________________________

Project Name: ______________________________________________________________________

Pay Application #: _________________  Period: ________________________________

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

<table>
<thead>
<tr>
<th>MBE FIRM NAME</th>
<th>* INDICATE TYPE OF MBE</th>
<th>AMOUNT PAID THIS MONTH</th>
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<th>TOTAL AMOUNT COMMITTED</th>
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*Minority categories:  Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: ________________  Approved/Certified By: ___________________________________

Name

Title

Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT

(Revised on 3/14/2003)
Identification of Minority Business Participation

I, ____________________________, (Name of Bidder)
do hereby certify that on this project, we will use the following minority business enterprises as
collection subcontractors, vendors, suppliers or providers of professional services.

<table>
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*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I),
Female (F) Socially and Economically Disadvantaged (D)

The total value of minority business contracting will be ($)____________.
State of North Carolina AFFIDAVIT – Listing of Good Faith Efforts

County of ____________________________  (Name of Bidder)

Affidavit of _______________________________________________________

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive.  (1 NC Administrative Code 30 I.0101)

☐ 1 – (10 pts) Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.

☐ 2 --(10 pts) Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.

☐ 3 – (15 pts) Broken down or combined elements of work into economically feasible units to facilitate minority participation.

☐ 4 – (10 pts) Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.

☐ 5 – (10 pts) Attended prebid meetings scheduled by the public owner.

☐ 6 – (20 pts) Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.

☐ 7 – (15 pts) Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities.  Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.

☐ 8 – (25 pts) Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required.  Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.

☐ 9 – (20 pts) Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.

☐ 10 - (20 pts) Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner.  Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_________________________  Name of Authorized Officer: ________________________________

Signature: ________________________________

Title:  __________________________________

State of North Carolina, County of ____________________________

Subscribed and sworn to before me this _______ day of ____________ 20 ___

Notary Public ________________________________

My commission expires _______________________

SEAL

MBForms 2002-R
County of __________________________

Affidavit of __________________________________________________________ (Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the __________________________

_________________________________________________________ contract. (Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all

elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: __________ Name of Authorized Officer: ________________________________

Signature: ______________________________________________________________

Title: _________________________________________________________________

State of North Carolina, County of __________________________
Subscribed and sworn to before me this ____________ day of _______ 20___
Notary Public _________________________
My commission expires __________________________
State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by Minority Firms

County of __________________________

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by minority businesses as defined in GS143-128.2(g) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive bidder within 72 hours after notification of being low bidder.

Affidavit of ___________________________________________ I do hereby certify that on the

(Name of Bidder)

______________________________

(Project Name)

Project ID# ______________________ Amount of Bid $ __________________________

I will expend a minimum of ______ % of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required.

<table>
<thead>
<tr>
<th>Name and Phone Number</th>
<th>*Minority Category</th>
<th>Work description</th>
<th>Dollar Value</th>
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*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: ____________ Name of Authorized Officer: ________________________________

Signature: __________________________________________ Title: __________________________

State of North Carolina, County of __________________________
Subscribed and sworn to before me this ______ day of _______ 20____
Notary Public ______________________________
My commission expires ______________

MBForms 2002-R
State of North Carolina

AFFIDAVIT D – Good Faith Efforts

County of ____________________________
(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by minority business is not achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

<table>
<thead>
<tr>
<th>Name and Phone Number</th>
<th>*Minority Category</th>
<th>Work description</th>
<th>Dollar Value</th>
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*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

Documentation of the Bidder’s good faith efforts to meet the goals set forth in these provisions. Examples of documentation include, but are not limited to, the following evidence:

A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster.

G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Date: ____________ Name of Authorized Officer: ________________________________
Signature: ________________________________
Title: ________________________________

State of North Carolina, County of ____________________________
Subscribed and sworn to before me this _____ day of ___________ 20___
Notary Public
________________________________________
My commission expires ________________
SUBSTITUTION REQUEST FORM

PROJECT: _____________________________________________________________

(Company Name of Prime Bidder (Contractor) who will submit Bid.)

(Address of Prime Bidder (Contractor) who will submit Bid.)

(Signature of Prime Bidder (Contractor) who will submit Bid.)

We hereby submit for your consideration the following product instead of the specified item for the above project.

SECTION                PARAGRAPH                SPECIFIED ITEM
__________________    _______________    __________________________________________
__________________    _______________    __________________________________________

PROPOSED SUBSTITUTION:

Attach complete technical data, including laboratory tests, if applicable.

Include complete information on changes to drawings and/or specifications which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to prove equal quality and performance to that which is specified. PLEASE INDICATE ALL COMPARATIVE INFORMATION, i.e. material weights, gauges, finishes, strength of materials, insulation, anchorage, power requirements, "R" factor, etc. Clearly mark manufacturer's literature to indicate equality in performance.

COMPLETE THE FOLLOWING:

1. Does the substitution affect dimensions shown on drawings?

   YES _____  NO _____  If yes, clearly indicate changes.

   ____________________________________________________________

2. Will the undersigned pay for any changes to the building design, including engineering and detailing costs caused by the requested substitution?

   ____________________________________________________________

3. What effect does substitution have on other trades?

   ____________________________________________________________

4. What effect does substitution have on applicable code requirements?

   ____________________________________________________________

5. Difference between proposed substitution and specified items are:

   ____________________________________________________________
6. Cost difference between proposed substitution and specified items is:
____________________________________________________________________________________

7. Contractor agrees to share cost savings with Owner.
____________________________________________________________________________________

8. Manufacturer’s guarantees of the proposed and specified items are:
   SAME _________  DIFFERENT _________ (EXPLAIN)
_____________________________________________________________________________________

9. Reason for substitution:
_____________________________________________________________________________________

Provide additional pages as necessary in order to provide adequate explanation.

CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE:

The undersigned states that the function, appearance, and quality are equivalent or superior to the specified item.

Submitted by: (Product Manufacturer or Vendor)

_____________________________________________  Date ______________________________
Firm

_____________________________________________  Telephone _________________________
Address

_____________________________________________  Fax _______________________________
City, State, Zip

_____________________________________________  __________________________________
Signature of Manufacturer/Provider                                             Title

Signature must be by person having authority to legally bind his firm to all of the above terms. Failure to provide legally binding signature will result in retraction of approval.

FOR USE BY ARCHITECT

_____ Approved  _____ Received too late
_____ Approved as noted  _____ Disapproved

REMARKS:
________________________________________________________________________________________
________________________________________________________________________________________

BY: ___________________________  DATE: ___________________________
SECTION 01011—SUMMARY OF WORK

PART 1   GENERAL

1.01  RELATED DOCUMENTS

Drawings and general provisions of each prime contract, including General and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.02  WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of all construction for the renovation of two residential structures owned by the City of Hickory for conversion of one into an office building and the other into group housing.
   
   1. Project Location: The project is located in Hickory, NC at 1209 and 1211 Fairgrove Church Rd, Conover, NC.
   
   2. Owner: City of Hickory

B. Contract Documents, dated October 18, 2019, were prepared for the project by CBSA Architects, Inc, the City of Hickory and Brittain Engineering.

The work of this contract generally consists of demolition and renovations to portions of interior of the existing structures plus the removal of an existing attached car port. Work includes removal of existing stud walls, doors and hardware, lighting, carpet and ceiling materials, installing new and reconfigured HVAC and electrical connections and new wall, ceiling and floor finishes.

1.03  CONTRACTS

The project shall be bid and constructed under the Single Prime Method. The contract to be used for this project shall be AIA Document A101-2007 Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum.

1.04  WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

B. Concurrent Work: Owner may provide additional site work as the project progresses.

1.05  PRIME CONTRACTORS USE OF PREMISES

A. General: During the construction period the prime Contractor shall have full use of the portion of the
building where demolition and new construction work is to occur

B. Use of the Site: The contractor shall have full use of the site around the building

C. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the public and emergency vehicles at all times.

1.06 OWNER'S OCCUPANCY REQUIREMENTS

A. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

1.07 EARLY COMPLETION OF PROJECT:

The Contractor may attempt to complete the project prior to the Contract Completion Date. However, such planned early completion shall be for the Contractor's convenience only and shall not create any additional rights of the Contractor or obligations of the Owner under this Contract, nor shall it change the Time for Completion or the Contract Completion Date. The Contractor shall not be required to pay liquidated damages to the Owner because of its failure to complete by its planned earlier date. Likewise, the Owner shall not pay the Contractor any additional compensation for early completion nor will the Owner owe the Contractor any compensation should the Owner, its officers, employees, or agents cause the Contractor not to complete earlier than the date required by the Contract Documents.

1.08 WORK MOBILIZATION AND SUBSTANTIAL COMPLETION

A. The actual project start date shall commence on or following the date established by the Architect/Owner in the Notice-To-Proceed. The Contractor shall be allowed to mobilize on site upon the Architect’s receipt of a properly and fully executed contract from the Contractor. In order to complete all work on time and to accommodate the Owner’s needs regarding scheduling the work, substantial completion for entire project shall be achieved.
1.09 **SPECIAL REQUIREMENTS FOR SUBSTANTIAL COMPLETION**

A. As a requirement for Substantial Completion for this project, the contractor shall apply for and receive a Certificate of Occupancy from the local Building Inspection Department. The Certificate shall cover the entire work of the project. Partial or Temporary Permits shall not be acceptable to meet requirements for Substantial Completion.

1.10 **CONTRACT COMPLETION / CLOSEOUT**

A. Refer to Division 1 – Project Closeout for a complete list of items to be completed by the Contractor before final payment can be made and the contract can be finalized.

B. In order to complete all work of the contract, all project closeout documents must be submitted to the Architect and all punch list items must be corrected within 60 consecutive calendar days following the date of Substantial Completion.

1.11 **MONTHLY ADMINISTRATION FEE (LIQUIDATED DAMAGES)**

A monthly administrative fee in the amount specified in the Supplementary General Conditions applies to this contract.

1.12 **PROJECT MEETINGS:**

A. In order to enable an orderly review of the work, to provide for an open discussion of problems, and to prevent unnecessary delays to the project, Monthly Construction Conferences will be conducted by the Architect. Attendance by representatives of all major sub-contractors, and the Owner are required for these meetings. In addition, a Pre-Construction conference will be conducted. Additionally, at appropriate times during the course of construction, the Architect may request that other subcontractors attend a particular meeting. Attendance by subcontractors, when requested, is part of the work of this contract and no additional compensation to the Prime Contractor shall be allowed.

B. The Architect shall compile the agenda for each meeting. To the extent practicable, the attendees shall notify the Architect at least 24 hours in advance of project meetings, regarding items to be added to the agenda.

C. The Architect will compile minutes of each Construction Conference and furnish copies to the Owner and Prime Contractors. Recipients may copy and distribute copies at their discretion. Should Prime Contractors find discrepancies in the minutes, they shall notify the Architect within 7 calendar days following receipt of the minutes.

1.13 **CONSTRUCTION PROGRESS REPORTING:**
A. At each construction meeting, the Contractor shall furnish a written summary report of the work which they have accomplished during the preceding month and also of the work proposed to be accomplished during the next month. The report shall be in summary form with sufficient detail to illustrate the amount of progress that has been made. The purpose of this report will be to assist the Architect in evaluating the actual progress of the work as it related and compares to the “Project Construction Schedule”. Copies of the reports will be attached to the minutes of the corresponding “Monthly Construction Conference”.

B. The General Contractor shall include summaries for his Plumbing, Mechanical, and Electrical Subcontractors.

1.14 FIELD ADJUSTMENTS AND COORDINATION:

A. Working drawings and specifications are not complete without architectural interpretation. Certain field adjustments and corrections of conflicts are to be expected. The Architect recognizes this fact and makes his services available to the Contractor on this project to answer questions of interpretation or intent and to make decisions wherever problems of any nature arise during the course of construction. One purpose of this service on the part of the Architect is to relieve the Contractor from the responsibility of making his own decisions where there can be doubt or question as to the proper decision with respect to interpretation, intent, adjustment, correction, coordination and the like.

B. All matters of this nature and of similar nature shall be referred to the Architect for his final decision. If the Contractor follows any other procedure concerning such matters, he will do so at his own risk and he will be held responsible for proper rectification as prescribed by the Architect.

1.15 CODES AND STANDARDS:

Wherever reference is given to codes, or standard specifications, or other data published by regulating agencies or accepted organizations, including but not limited to National Electrical Codes, N. C. State Building Codes, Local Building Code, Federal Specifications, ASTM Specifications, various Institute Specifications, and the like, it shall be understood that such reference is to the latest edition including addenda published prior to the date of the contract documents.

1.16 SHOP DRAWINGS: Refer also to the “General Conditions”.

A. Submit shop drawings for all manufactured or fabricated equipment or material including manufacturer's catalog data and manufacturer's specifications.

B. Shop drawings shall show arrangement, dimensions, material, finishes, shapes, capacities, quality, connections with other work, cutting, fitting, drilling required, and other necessary information.

C. When shop drawings are required to be submitted to Building Authorities, the Contractor shall submit them and secure approval of the Authorities.

D. The Contractor shall keep a copy of his approved Shop Drawings on the job site at all times after their approval, and he shall make them available, for reference, to the authorized representative of other
Contractors, Subcontractors, Architect and Owner.

E. The Contractor shall make and verify all field measurements.

F. Where the contractor anticipates tight installation conditions or interferences, the shop drawing shall indicate the effective contiguous work of other trades and shall be responsible for cross-checking the shop drawings and/or actual installation work with the work of other contractors.

G. Shop Drawing size shall not exceed 36" x 24".

1.17 RECORD DRAWINGS (As-Builts):

The Contractor shall deliver to the Architect, prior to final payment, one complete set of marked up legible reproducible drawings showing all changes to general construction, equipment, mechanical, plumbing, and electrical systems and connections as installed or built.

1.18 WORK PHASES (LIQUIDATED DAMAGES)

The overall work including accepted alternates shall be conducted in one phase. Time to commence construction shall be established in the Notice to Proceed. Punch list work shall be complete no later than thirty (30) consecutive calendar days following issuance of punch list. Close out documents shall be satisfactorily submitted no later than sixty (60) consecutive calendar days from Date of Substantial Completion.

1.15 CONTRACTOR'S CONSTRUCTION SCHEDULE:

Following the Architect's approval, the General Contractor shall distribute copies of the construction schedule to all Prime Contractors (Plumbing, Mechanical, and Electrical), the Owner, and the Architect. The number of copies shall be:

Architect -------------------------- 2 copies
Owner ----------------------------- 2 copies
Prime Subcontractors ----------- 2 copies
Consulting Engineers ----------- 2 copies

1.16 REQUEST FOR PAYMENT:

A. Contractors are directed to use forms similar to AIA Document G702, Application and Request for Payment. Each line item of expense, where applicable, shall be broken down into Material Cost and Labor Cost.

B. Contractors wishing to use non-AIA documents for pay applications shall obtain approval from the Architect for the form to be substituted.

C. The following example should be used as a guide in preparing line item breakdown of costs for subsequent pay application. The Contractor shall include those items relative to his work.
## GENERAL CONSTRUCTION

<table>
<thead>
<tr>
<th>Permits</th>
<th>Plumbing Fixtures (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance &amp; Material &amp; Performance Bonds</td>
<td>Plumbing Fixtures (L)</td>
</tr>
<tr>
<td>Temporary Utilities and Sanitation Safety, Barricades, Fence &amp; Gate, etc.</td>
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</tr>
<tr>
<td>Superintendent</td>
<td></td>
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<tr>
<td>Demolition</td>
<td></td>
</tr>
<tr>
<td>Contingency Allowance</td>
<td></td>
</tr>
<tr>
<td>Insurance, Material and Performance Bonds</td>
<td></td>
</tr>
<tr>
<td>Mobilization</td>
<td>Above Grade Water Piping (M)</td>
</tr>
<tr>
<td>General Clean Up</td>
<td>Above Grade Water Piping (L)</td>
</tr>
<tr>
<td>Final Cleaning</td>
<td>Water Treatment (L)</td>
</tr>
<tr>
<td>Temporary Road</td>
<td>Insulation (M)</td>
</tr>
<tr>
<td>Site Demolition</td>
<td>Insulation (L)</td>
</tr>
<tr>
<td>Caulking and Sealants (M)</td>
<td>Demolition</td>
</tr>
<tr>
<td>Caulking and Sealants (L)</td>
<td></td>
</tr>
</tbody>
</table>

## PLUMBING CONSTRUCTION

| Above Grade Water Piping (M) | |
| Above Grade Water Piping (L) | |
| Water Treatment (L) | |
| Insulation (M) | |
| Insulation (L) | |

## MECHANICAL CONSTRUCTION

| Exhaust Fans (M) | |
| Exhaust Fans (L) | |
| Diffusers & Grilles (M) | |
| Diffusers & Grilles (L) | |
| Louvers & Dampers (M) | |
| Louvers & Dampers (L) | |
| Crane (L) | |
| Ductwork and Liner (M) | |
| Ductwork and Liner (L) | |
| Insulation (M) | |
| Insulation (L) | |
| Control System | |
| Control Wiring | |
| Test and Balance | |
| Start, Check (L) | |

## ELECTRICAL CONSTRUCTION

| Conduit, Boxes & Fittings (M) | |
| Conduit, Boxes & Fittings (L) | |
| Wire & Terminations (M) | |
1.17 SPECIAL REQUIREMENT FOR PAY APPLICATIONS

A. Tax Forms and Receipts
1. All sales tax levied on materials entering into this building is to be paid by the Contractor for the work, including Local Option Sales and Use Tax.

2. The Contractor shall submit with each pay application a certificate of Sales Tax paid as required by the NC Department of Revenue for refunding sales tax on publicly owned buildings. The report shall be submitted on a form similar to the sample form bound in these specifications and shall include the work of all subcontractors. Backup documentation such as invoices shall be attached to the Sales Tax Form. Submit two (2) copies of the form and backup documentation.

B. Materials Stored Off Site:
1. Estimates for payments on materials will not be approved unless the materials are suitable stored and adequately protected on the site or as hereinafter specified.

2. In the event that off-site storage is necessary, the contractor shall submit with his Application for Payment the following documents as substantiation of properly stored items:

   1) On the Contractor’s letterhead, a letter stating the name of the item or materials, the quantity and invoiced cost, and location of the stored items. This letter shall be notarized.

   2) Evidence from the Contractor’s insurance company that the items are properly covered from loss by adequate insurance.

   3) Copies of the Materials Vendors invoices to the Contractor for the stored material or items.

C. Materials Stored On Site:
1. Estimates for payments on materials will not be approved unless the materials are suitable stored and adequately protected on the site or as hereinafter specified.

2. In the event that on-site storage is necessary, the contractor shall submit with his Application for Payment the following documents as substantiation of properly stored items:
1) On the Contractor’s letterhead, a letter stating the name of the item or materials, the quantity and invoiced cost. This letter shall be notarized.

2) Copies of the Materials Vendors invoices to the Contractor for the stored material or items.

1.18 INSTRUCTION OF OWNER’S PERSONNEL:

A. The Contractor shall make arrangements with the Owner and the various manufacturers of specialized equipment to provide complete instruction of the Owner’s employees in the proper use and maintenance of the equipment furnished by him prior to beneficial occupancy of the building.

B. See also Division 1 Section “Closeout Procedures”.

1.19 LIST OF PROPOSED SUBCONTRACTORS AND VENDORS

Refer to Article 5 of the General Conditions, Heading 5.2. The Contractor shall forward to the Architect for his records a list of proposed subcontractors and vendors within 21 days after the ward of the Contract. Should the Owner find objection to any proposed subcontractor, then he shall notify the contractor within seven days of receipt of the aforementioned list and a replacement subcontractor shall be agreed to along with any change in the contract price.

END OF SECTION 01011
SECTION 01012---TEMPORARY FACILITIES: (Applying to All Contractors)

1.01 UTILITIES, STRUCTURES, SIGNS:

A. Sanitary Arrangements:

The General Contractor shall provide portable toilet facilities required for a complete and adequate sanitary arrangement. These facilities will be available to other Contractors on the job and shall be kept in a neat and sanitary condition at all times.

A separate portable toilet shall be provided by the General Contractor for the use of female workers.

B. Temporary Structures:

The General Contractor may use the interior of the work area as a field office.

Each separate contractor shall make arrangements, as far as practical, to have materials delivered to the site on an as needed basis as there is limited storage space on site. Any temporary structures shall be built in a sound waterproof manner and shall remain on the premises until their removal is approved by the Architect.

C. Water:

The Contractors may use the existing water supply and shall make the necessary arrangements to convey water to point of use, as required, and shall be responsible for all damage to water lines and upon completion of the project remove all temporary lines. The metered cost of water used shall be borne by the Owner.

D. Electricity:

The General Contractor may make use of the existing electrical supply and provide all temporary electric service and lighting required during the entire construction period. The metered cost of electricity used shall be borne by the Owner.

The electric service shall be of sufficient capacity and characteristics to supply the proper current for the various types of construction tools, motors, welding machines, lights, heating equipment, pumps, and other work required. All necessary temporary wiring, panelboards, outlets, switches, lamps, fuses, controls and accessories, except extension cords, shall be provided. A sufficient number of electric outlets shall be provided; locate outlets so that 50 ft. long extension cords will reach all work requiring light or power. Temporary light shall be based on one 200-watt lamp for each 1000 sq. feet of floor area, with adequate lighting in all stair wells and corridors and a minimum of one light per room. Lights shall be kept in service at all times for use by all workmen on the project and for inspections.

Temporary electrical service shall comply with requirements of the Occupational Safety and Health Act.
E. Temporary Heat:

General Requirements: The General Contractor use the existing heating system to provide temporary air conditioning as necessary to carry on the work expeditiously during inclement weather, to protect all work and materials against injury from dampness and cold, to dry out the building and to provide suitable working conditions for the installation and curing of materials, until final acceptance by the Owner. Refer to requirements in detail specifications for temperatures to be provided and maintained for installation and curing under the various trades.

The General Contractor shall be responsible for proper cleaning of the building and obtaining the Architects approval prior to operation of the permanent heating system.

F. Temporary Roads: N/A

1.02 SPECIAL PROVISIONS:

The Contractor shall erect and maintain neat safe barricades at all excavations and other places as required. Warning lights on barricades shall be electric blinkers.

1.03 TEMPORARY SCAFFOLDS, STAGING AND SAFETY DEVICES:

Provide, erect, maintain and remove all scaffolding, staging, platforms, temporary runways, temporary flooring, guards, railings, stairs, etc., as required by local and state codes, or laws, for the protection of workmen and the public. The construction, inspection and maintenance of the above items shall comply with all safety codes and regulations as applicable to the project.

1.04 LIFTING DEVICES AND HOISTING FACILITIES:

Contractors shall provide cranes and other lifting devices necessary for the proper and efficient movement of materials; provide operating personnel for equipment as required. Equipment shall be provided with proper guys, bracing and other safety devices as required by local or state codes. Remove hoisting equipment when they are no longer needed, or as directed by Architect.

1.05 PARKING: As required.

1.06 SIGNS:

Directional signs may be erected on the Owner's property subject to approval of the Owner with respect to size, style, and location of such directional signs. Such signs may bear the name of the Contractor and a directional symbol.

No other signs will be permitted except by permission of the Owner.

The General Contractor shall erect one project sign as detailed on the drawings.
1.07 TEMPORARY CONSTRUCTION FENCE:

As required for safety and/or as shown on drawings, the temporary construction fence shall be constructed of 4 x 4 wood posts 4’ high with three (1 x 6) boards. At contractors option, steel pickets 4’ high on woven wire mesh or other approved material may be used.

1.08 PROTECTION OF EXISTING FACILITIES:

It shall be the obligation of the Contractor to direct his work in such a manner so as to eliminate or minimize damage to the existing facilities. All damage to existing construction and property shall be repaired to the original condition by the responsible prime contractor.

END OF SECTION 01012
SECTION 01015---CLEANING UP: (Applying to All Contractors)

1.01 GENERAL:

The requirements listed herein shall be in addition to those covered by paragraphs 4.15 and 6.3 of the General Conditions.

1.02 SCOPE:

The General Contractor shall maintain adequate laborers on the project whose primary duty will be to keep the accumulated trash of all trades normally found on construction sites removed from the building and to maintain uncluttered working conditions.

The General Contractor shall clean all glass; replace all broken glass; remove stains, spots, marks and dirt from finish work; clean all hardware; remove paint spots or smears from all surfaces; clean all resilient tile, ceramic tile or other floors.

See Plumbing, Mechanical, and Electrical Specifications for cleaning all fixtures or appliances furnished and installed under their respective headings.

The project shall be "broom cleaned" and all rubbish and trash shall be removed from the site a minimum of once per week.

NOTE: The owner will provide a dumpster for the contractors use at no cost to the contractor.

All rubbish, surplus materials, storage shed, etc., shall be removed from the premises prior to project closeout.

1.03 CLEANING INSTRUCTIONS:

All cleanup work shall be done in accordance with cleaning instructions specified in technical specifications. Cleaning materials used shall be of suitable types for surfaces to be cleaned and shall be used in accordance with manufacturer’s instructions.

END OF SECTION 01015
SECTION 01020---ALLOWANCES:

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. This section includes administrative and procedural requirements governing allowances.

   Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

   Lump-sum allowances.

   Inspection and testing allowances. N/A

   Contingency allowances.

C. Related Sections: The following Division I Sections contain requirements that relate to this Section:

   Section "Modification Procedures" specifies procedures for submitting and handling Change Orders.

   Section "Quality Control Services" specifies procedures governing the use of allowances for inspection and testing.

1.03 SELECTION AND PURCHASE:

At the earliest practical date after award of the contract, advise the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

At the Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

Purchase products and systems selected by the Architect from the designated supplier.
1.04 SUBMITTALS:

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.05 SPECIFIED ALLOWANCES - ACCOUNTING: N/A

1.06 CONTINGENCY ALLOWANCES - ACCOUNTING:

Contingency allowances shall be considered non-specified allowances and consist of a General Contingency Allowance.

Each contingency allowance shall cover all added costs to the contractor including materials, equipment, labor, installation, unloading and handling, storage, subcontract work, warranties, overhead, etc. reasonably contemplated for incorporating the work to be furnished by the allowance into the project. To the sum of the above costs, the Contractor agrees to add an amount for profit not to exceed amounts indicated within the Supplementary General Conditions of the total cost for the work to be added under the allowance. If contingency allowances are used to furnish additional work to the project, the Contractor will be reimbursed for profit and overhead from the contingency allowance amount. The Bidders are therefore cautioned not to include profit and overhead for contingency allowance amounts when computing their original bid for the project.

1.07 SPECIFIED LUMP-SUM AND UNIT PRICE ALLOWANCES: N/A

1.08 INSPECTION AND TESTING ALLOWANCES: N/A

1.09 CONTINGENCY ALLOWANCES:

Use contingency allowances only as directed for the Owner's purposes and only by written authorization by the Architect which indicates amounts to be charged to the allowance.

1.10 UNUSED MATERIALS:

Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.

When requested by the Architect, prepare unused material for storage by Owner where it is not economically practical to return the material for credit. When directed by the Architect,
deliver unused material to the Owner’s storage space. Otherwise, disposal of unused material is the Contractor’s responsibility.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 EXAMINATION:
Examine products covered by an allowance promptly upon delivery for damage or defects.

3.02 PREPARATION:
Coordinate materials and their installation for each allowance with related materials and installation to ensure that each allowance item is completely integrated and interfaced with related work.

3.03 SCHEDULE OF ALLOWANCES:
Various sections of the specifications contain additional information about specific allowances required for this project. Refer to sections noted in the schedule for further details of allowances. The purpose of the schedule is to provide a reference guide for the contractor and to state allowance amounts so that all allowances will be included in the proposal.

Include in the Base bid amount, unless otherwise indicated, the following amounts:

<table>
<thead>
<tr>
<th>CONTINGENCY ALLOWANCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section “Summary of Work”</td>
</tr>
</tbody>
</table>

3.04 BOOKKEEPING PROCEDURES:
Each allowance herein required shall be included as a separate line item on the Contractor's Pay Request. All items to be charged to the respective allowance shall be authorized by the Architect in writing prior to proceeding with the work. A Change Order to incorporate the added work to be charged to the allowance shall be required. Contractor shall submit invoices from the manufacturer for any cost to be charged against any item within Specified Allowances.

Prior to review of the contractor's Final Pay Request, the Architect will initiate a change order to deduct from the contract price, any remaining unused amounts in the various allowances.

In the event that added work exceeds the amount of the allowances, a change order will be initiated by the Architect to account for deficiencies.
Refer to Section - Modification Procedures for additional information and requirements.

END OF SECTION 01020
SECTION 01035---MODIFICATION PROCEDURES:

PART 1  GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

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

  Single Prime Contracts: Provisions of this Section apply to all of the work of the single prime contractor.

B. Related Sections: The following Division 1 Sections contain requirements that relate to this Section:

  Section "Summary of the Work" for requirements for the Contractor's Construction Schedule.

  Section "Summary of the Work" for administrative procedures governing “Requests for Payment”.

  Section "Unit Prices" for administrative requirements governing use of unit prices.

1.03 MINOR CHANGES IN THE WORK:

The Architect will issue supplemental written instructions authorizing minor changes in the Work, not involving adjustments to the Contract Sum or Contract Time. Verbal authorization by the Architect will be subsequently documented by the Architect for record keeping.

1.04 CHANGE ORDER PROPOSAL REQUESTS:

A. Owner-Initiated Proposal Requests: The Architect will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

Proposal requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.

Within 21 days of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Architect for the Owner's review.

  Include a list of quantities of products required and unit costs, with the total amount of
purchases to be made. Where requested, furnish survey data to substantiate quantities.

Identify as separate items and indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts. Include installation costs, labor costs, supervision, administration, and profit.

Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.

Include a statement outlining the reasons for the change and the effect of the change on the Work. Price a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.

Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.

Identify as separate items and indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts. Include installation costs, labor costs, supervision, administration, and profit.

Comply with requirements in Section "Product Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.

C. Proposal Request Form: At his option, the Contractor may use his own form or use AIA Document G709 for Change Order Proposal Requests.

1.05 CONSTRUCTION CHANGE DIRECTIVE:

When the Owner and the Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive either by letter or on AIA Form G714. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.

Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
1.06 CHANGE ORDER PROCEDURES:

Upon the Owner's approval of a Proposal Request, the Architect will issue a Change Order for signatures of the Owner and the Contractor on AIA Form G701.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01035
SECTION 01740---WARRANTIES:

PART 1   GENERAL

1.01  RELATED DOCUMENTS:

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

1.02  SUMMARY:

A.  This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

Refer to the General Conditions for terms of the Contractor's period for correction of the Work.

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

- Division 1 Section 01700 "Project Closeout" specifies contract closeout procedures.

- Division 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.

- Certificates and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

C.  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. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

Separate Prime Contracts: Each prime contractor is responsible for warranties related to its own contract.

1.03  WARRANTY REQUIREMENTS:

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

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 the 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: Expressed 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. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.04 SUBMITTALS:

Submit written warranties to the Architect no later than 30 days following 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 no later than 30 days following the date designated.

When a designated portion of the work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 30 days of completion of that designated portion of the Work.

Form of Submittal: At final completion, compile two copies 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.

Bind warranties and bonds 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 inch paper.

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.

Identify each binder on the front with the typed or printed title "WARRANTIES," project title or name, and name of the Contractor.

When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty and include copy of warranty in each required manual.

PART 2 PRODUCTS - Not applicable.
PART 3  EXECUTION

3.01 LIST OF WARRANTIES:

Schedule: Provide warranties on products and installations as specified in the following sections which are scheduled here as reference. Failure to list a required warranty in this reference schedule does not relieve the contractor of his responsibility to provide any and all warranties which are specified elsewhere in the Contract Documents.

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>REFERENCE SECTION</th>
<th>WARRANTY DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplementary General Conditions</td>
<td>Contractor's 1-Year Warranty</td>
<td></td>
</tr>
<tr>
<td>Division 8</td>
<td>Wood Doors</td>
<td>Manufacturer’s Warranty</td>
</tr>
<tr>
<td>Division 8</td>
<td>Finish Hardware</td>
<td>Manufacturer’s Warranty</td>
</tr>
<tr>
<td>Division 9</td>
<td>Gypsum Drywall</td>
<td>Manufacturer’s 5-Year Warranty</td>
</tr>
<tr>
<td>Division 9</td>
<td>Acoustical Ceiling System</td>
<td>Manufacturer’s Warranty</td>
</tr>
<tr>
<td>Division 9</td>
<td>Vinyl plank flooring</td>
<td>Manufacturer’s Warranty</td>
</tr>
</tbody>
</table>

END OF SECTION 01740
SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Documents required.
3. Final cleaning.

B. Related Sections include the following:

1. Division 1 Section "Warranties".
2. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 PROJECT ACCEPTANCE

A. Preliminary Procedures: Before requesting inspection for determining date of Project Acceptance, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit red-marked Project Record Documents, operation and maintenance manuals, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer’s name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner’s personnel of changeover in security provisions.
8. Complete startup testing of systems.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for a Pre-Final Inspection by the Architect. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Following the inspection, the Architect will notify Contractor of items, either on Contractor's list or additional items identified by Architect that must be completed or corrected before final inspection will be made.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Acceptance.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Acceptance, complete the following:

1. Submit a final Application for Payment.
2. Submit certified copy of Architect's Pre-Final inspection list of items to be completed or corrected (punch list). The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit roster of Owner's representatives that attended training sessions.
5. Submit all information as indicated within the Close-out Documents Check List provided at the end of this Section.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will process a final Request for Payment after inspection or will notify Contractor of construction that must be completed or corrected before payment will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
1.5 CONTRACTOR’S LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties within 15 calendar days following the date of Final Acceptance of the Project.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. Final Cleaning shall be provided by the Prime General Contractor.

B. Cleaning: Employ professional cleaners for final cleaning. Along with other closeout documents, submit copies of Professional Cleaning Companies Invoices covering work furnished Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer’s written instructions.

1. Complete the following cleaning operations before requesting final inspection for Final Acceptance for entire Project or for a portion of Project:
RENOVATIONS FOR
FAIRGROVE LIFE HOUSES
CITY OF HICKORY

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean ducts, blowers, and coils if units were operated without filters during construction.
r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.
C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.
## CLOSE-OUT DOCUMENTS CHECKLIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DATE RECEIVED/DELIVERED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affidavit of Payments of Debts and Claims (G706) (3 notarized copies)</td>
<td></td>
</tr>
<tr>
<td>Consent of Surety (G707) (3 notarized copies)</td>
<td></td>
</tr>
<tr>
<td>Release of Liens from Subcontractors and Material Suppliers (G706A) (3 notarized copies)</td>
<td></td>
</tr>
<tr>
<td>Final Application for Payment (4 notarized copies)</td>
<td></td>
</tr>
<tr>
<td>Manufacturer’s Owners Manuals and/or Maintenance Manuals</td>
<td></td>
</tr>
<tr>
<td>Record (As-Built) Drawings (Not required)</td>
<td></td>
</tr>
<tr>
<td>Manufacturer’s Guarantees, Warranties, etc.</td>
<td></td>
</tr>
<tr>
<td>On Company Letterhead, Letter stating No Asbestos Materials Used</td>
<td></td>
</tr>
<tr>
<td>On Company Letterhead, Letter stating Punch List Items are Complete with a Copy of the Checked Off Punch List Items</td>
<td></td>
</tr>
<tr>
<td>Approved &amp; Updated Shop Drawing/Submittals</td>
<td></td>
</tr>
<tr>
<td>Copy of “Certificate of Occupancy”</td>
<td></td>
</tr>
</tbody>
</table>

END OF SECTION 01770
SECTION 02300 --- EARTHWORK

PART 1    GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

This Section includes the following:

- Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
- Excavating and backfilling for buildings and structures.
- Drainage course for slabs-on-grade.
- Subbase course for concrete walks and pavements.
- Base course for asphalt paving.
- Subsurface drainage backfill for walls and trenches.
- Excavating and backfilling trenches within building lines.
- Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.

Related Sections include the following:

- Division 1 Section “Allowances” for a schedule of allowances.
- Division 2 Section “Landscaping - Lawns” for finish grading, including placing and preparing topsoil for lawns and plantings.

1.03 UNIT PRICES - Not applicable.

1.04 SOIL TESTING:

A testing laboratory will be selected by the Owner and/or Architect. The extent of soil testing shall be determined by the Architect. Invoices for the testing laboratories services should be sent directly to the Owner from the testing company. The Contractor shall provide access to the site and casual labor to assist the soil testing company. The Contractor shall notify the testing company in a timely manner when work is ready for testing.

1.05 SURVEY ALLOWANCE: Not applicable.
1.06 SUBSURFACE SOIL DATA (GEOTECHNICAL REPORT): Not Applicable

1.07 DEFINITIONS:

Backfill: Soil materials used to fill an excavation.

    Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.

    Final Backfill: Backfill placed over initial backfill to fill a trench.

Base Course: Layer placed between the sub-base course and asphalt paving.

Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.

Borrow: Satisfactory soil imported from off-site or on-site sources for use as fill or backfill.

Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.

Excavation: Removal of material encountered above subgrade elevations.

    Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

    Bulk Excavation: Excavations more than 10 feet (3 m) in width and pits more than 30 feet (9 m) in either length or width.

    Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

Fill: Soil materials used to raise existing grades.

Rock: Rock material in beds, ledges, un-stratified masses, and conglomerate deposits and boulders of rock material 3/4 cu. yd. (0.57 cu. m) or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2 inches (97 blows/50 mm).

Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

Sub-base Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.

Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below sub-base, drainage fill, or topsoil materials.

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EARTHWORK

02300-2
Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.08 SUBMITTALS: Not applicable.

PART 2 PRODUCTS

2.01 SOIL MATERIALS:

General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH and PT, or a combination of these group symbols.

Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

Backfill and Fill: Satisfactory soil materials.

Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (38-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch (38-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (38-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (38-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.
Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch (25-mm) sieve and 0 to 5 percent passing a No. 4 (4.75-mm) sieve.

Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.02 ACCESSORIES:

Drainage Fabric: Non-woven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:

- **Grab Tensile Strength**: 110 lbf (490 N); ASTM D 4632.
- **Tear Strength**: 40 lbf (178 N); ASTM D 4533.
- **Puncture Resistance**: 50 lbf (222 N); ASTM D 4833.
- **Water Flow Rate**: 150 gpm per sq. ft. (100 L/s per sq. m); ASTM D 4491.
- **Apparent Opening Size**: No. 50 (0.3 mm); ASTM D 4751.

Separation Fabric: Woven geotextile, specifically manufactured for use as a separation geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:

- **Grab Tensile Strength**: 200 lbf (890 N); ASTM D 4632.
- **Tear Strength**: 75 lbf (333 N); ASTM D 4533.
- **Puncture Resistance**: 90 lbf (400 N); ASTM D 4833.
- **Water Flow Rate**: 4 gpm per sq. ft. (2.7 L/s per sq. m); ASTM D 4491.
- **Apparent Opening Size**: No. 30 (0.6 mm); ASTM D 4751.

PART 3 EXECUTION

3.01 PREPARATION:

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.02 DEWATERING:

Prevent surface water and ground water from entering excavations, from ponding on prepared sub-grades, and from flooding Project site and surrounding area.
Protect sub-grades from softening, undermining, washout, and damage by rain or water accumulation.

Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

Install a dewatering system to keep sub-grades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.03 EXPLOSIVES:

Explosives: Do not use explosives.

3.04 EXCAVATION, GENERAL:

Classified Excavation: Excavation to subgrade elevations classified as earth and rock. Rock excavation will be paid for by allowance and adjusting the Contract Sum according to unit prices included in the Contract Documents.

Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.

Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

Rock excavation includes removal and disposal of rock.

Do not excavate rock until it has been classified and cross-sectioned by Architect.

3.05 EXCAVATION FOR STRUCTURES:

Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch (25 mm). Do not disturb bottom of excavations intended for bearing surface.

3.06 EXCAVATION FOR WALKS AND PAVEMENTS:

Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.
3.07 EXCAVATION FOR UTILITY TRENCHES:

Excavate trenches to indicated gradients, lines, depths, and elevations.

    Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.

    Clearance: As indicated on drawings or if not indicated 12 inches (300 mm) on each side of pipe conduit.

Trench Bottom: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape sub-grade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

    For pipes and conduit less than 6 inches (150 mm) in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.

    For pipes and conduit 6 inches (150 mm) or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.

    Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.08 APPROVAL OF SUBGRADE:

Notify Architect when excavations have reached required subgrade.

If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted back-fill or fill material as directed.

    Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated sub-grades.

Reconstruct sub-grades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.

3.09 UNAUTHORIZED EXCAVATION:

Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.
Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.10 STORAGE OF SOIL MATERIALS:

Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without inter-mixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL:

Place and compact backfill in excavations promptly, but not before completing the following:

Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.

Surveying locations of underground utilities for record documents.

Inspecting and testing underground utilities.

Removing concrete formwork.

Removing trash and debris.

Removing temporary shoring and bracing, and sheeting.

Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.12 UTILITY TRENCH BACKFILL:

Place and compact bedding course on trench bottoms and other locations only where indicated by drawings. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

Backfill trenches excavated under footings and within 18 inches (450 mm) of bottom of footings; fill with concrete to elevation of bottom of footings.

Provide 4-inch- (100-mm-) thick, concrete-base slab support for piping or conduit less than 30 inches (750 mm) below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches (100 mm) of concrete before backfilling or placing roadway sub-base.

Place and compact initial backfill of sub-base material, free of particles larger than 1 inch (25 mm), to a height of 12 inches (300 mm) over the utility pipe or conduit.

Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
Coordinate backfilling with utilities testing.

Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.

Place and compact final backfill of satisfactory soil material to final subgrade.

3.13 FILL:

Preparation: REFER to Division 2 “Site Clearing”. Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

Place and compact fill material in layers to required elevations as follows:

- Under grass and planted areas, use satisfactory soil material.
- Under walks and pavements, use satisfactory soil material.
- Under steps and ramps, use engineered fill.
- Under building slabs, use engineered fill.
- Under footings and foundations, use engineered fill.

3.14 MOISTURE CONTROL:

Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.

- Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 COMPACTION OF BACKFILLS AND FILLS

Place backfill and fill materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
Compact fills and backfills to the following minimum densities, expressed as percentages of maximum densities as determined by Standard Proctor Method ASTM D-698. Fills are to be tested by a qualified soils engineer. Fills are to be tested at least every 2 ft. in elevation and the reports to the Architect are to show the plan location and elevation of each test.

a. Fill under lawn and planted areas to 3" below finish grade, 95 per cent.

b. Top two feet of fill under exterior surfaced areas, gutters, curbs, parking areas, walks, walls, terraces, steps, etc. to be 100%. Remainder of such fill to be 95%.

c. Top two feet of fills under building areas, such as surfaced areas, floors, footings, areaways, stairs, etc., to be 100%. Remainder of such fill to be 95%.

3.16 GRADING

General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

Provide a smooth transition between adjacent existing grades and new grades.

Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

- Lawn or Unpaved Areas: Plus or minus 1 inch (25 mm).
- Walks: Plus or minus 1 inch (25 mm).
- Pavements: Plus or minus 1/2 inch (13 mm).

Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

3.17 SUBSURFACE DRAINAGE:

Refer to Section “Storm Drainage”.

3.18 SUBBASE AND BASE COURSES:

Refer to the following sections:

- Section “Hot-Mix Asphalt”
- Section “Cement Concrete Paving”

3.19 DRAINAGE COURSE:
Under slabs-on-grade, place drainage course on prepared subgrade or drainage fabric where drawings indicate and as follows:

Compact drainage course to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

When compacted thickness of drainage course is 6 inches (150 mm) or less, place materials in a single layer.

When compacted thickness of drainage course exceeds 6 inches (150 mm), place materials in equal layers, with no layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick when compacted.

3.20 FIELD QUALITY CONTROL:

Testing Agency: Owner will assign to the General Contractor a qualified independent geotechnical engineering testing agency to perform field quality control testing.

Allow testing agency to inspect and test sub-grades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work complies with requirements.

Footing Subgrade: At footing sub-grades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing sub-grades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab, but in no case fewer than three tests.

Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet (30 m) or less of wall length, but no fewer than two tests.

Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet (46 m) or less of trench length, but no fewer than two tests.

When testing agency reports that sub-grades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

When work fails to meet specified requirements, re-testing of corrective work shall be paid by the Contractor.

3.21 PROTECTION:

Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact and reconstruct surfacing.

Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS:

Disposal: Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner’s property.

END OF SECTION 02300
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SECTION 02511 --- HOT-MIX ASPHALT PAVING

PART 1   GENERAL

1.01   RELATED DOCUMENTS:

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

1.02   SUMMARY:

This Section includes the following:

- Hot-mix asphalt paving.
- Pavement-marking paint.

Related Sections include the following:

- Division 2 Section “Earthwork” for aggregate sub-base and base courses and aggregate pavement shoulders.

1.03   SYSTEM DESCRIPTION:

Provide hot-mix asphalt pavement according to the materials, workmanship, and other applicable requirements of the standard specifications of the North Carolina State Department of Transportation (NCDOT).

1.04   SUBMITTALS:

Product Data: For each product specified. Include technical data and tested physical and performance properties.

Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

Qualification Data: For firms and persons specified in the “Quality Assurance” Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

Material Certificates: Certificates signed by manufacturers certifying that each material complies with requirements.

1.05   QUALITY ASSURANCE:
Reference Specifications: Latest edition including addenda, of “Standard Specifications for Road Structures, North Carolina Department of Transportation”.

Installer Qualifications: Engage a firm experienced installer who has completed hot-mix asphalt paving similar in material design, and extent to that indicated for this Project and with a record of successful in-service performance.

Manufacturer Qualifications: Engage a firm experienced in manufacturing hot-mix asphalt similar to that indicated for this Project and with a record of successful in-service performance.

Firm shall be a registered and approved paving mix manufacturer with the DOT of the State of North Carolina.

1.06 DELIVERY, STORAGE, AND HANDLING:

Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer’s labels containing brand name and type of material, date of manufacture, and directions for storage.

Store pavement-marking materials in a clean, dry, protected location and within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.07 ASPHALT TESTING:

The Owner shall engage the services of an independent testing agency to sample and test installed pavements. Areas of pavement not complying with specifications shall be replaced and re-tested. Expense of re-testing shall be paid by the Contractor.

1.08 PROJECT CONDITIONS:

Environmental Limitations: Do not apply asphalt materials if substrate is wet or excessively damp or if the following conditions are not met:

   Prime and Tack Coats: Minimum surface temperature of 60 deg F (15.5 deg C).

   Slurry Coat: Comply with weather limitations of ASTM D 3910.

   Asphalt Base Course: Minimum surface temperature of 40 deg F (4 deg C) and rising at time of placement.

   Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.5 deg C) at time of placement.

Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F (4 deg C) for oil-based materials, 50 deg F (10 deg C) for water-based materials, and not exceeding 95 deg F (35 deg C).

PART 2 PRODUCTS
2.01 AGGREGATES:

General: Use materials and gradations that have performed satisfactorily in previous installations and comply with DOT guidelines.

Coarse Aggregate: Sound; angular crushed stone and/or crushed gravel; complying with ASTM D 692.

Fine Aggregate: Sharp-edged natural sand or sand prepared from stone, or combinations thereof; complying with ASTM D 1073.

For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

Mineral Filler: Rock dust, hydraulic cement, or other inert material complying with ASTM D 242.

2.02 ASPHALT MATERIALS:

Asphalt Cement: ASTM D 3381 for viscosity-graded material.

Prime Coat: Asphalt emulsion prime conforming to state DOT requirements.

Tack Coat: ASTM D 977, emulsified asphalt or ASTM D 2397, cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application.

Water: Potable.

2.03 AUXILIARY MATERIALS:


Color: Blue for handicap requirements, yellow for fire lanes, and white elsewhere.

2.04 MIXES:

Hot-Mix Asphalt: Provide dense, hot-laid, hot-mix asphalt plant mixes approved by NCDOT designed according to procedures in AI's “Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types”; and complying with the following requirements:

Surface Course: See Plans.

2.05 SIGNS:

Handicap signs shall be manufacturer’s standard word and picture signs similar to those shown on the drawings. Size of sign shall be manufacturer’s standard for type and size indicated on drawings.

Sign material shall be painted aluminum. Post shall be galvanized steel.
Sign colors shall be blue, white, and green as indicated on drawings.

2.06 WHEELSTOPS

Precast, air-entrained concrete, 2500 PSI (17.2 MPa) minimum compressive strength, 4-1/2” inches (115 mm) high by 9 inches (225 mm) wide by 72 inches (1800 mm) long. Provide chamfered corners and drainage slots on underside and holes for anchoring to substrate.

PART 3 EXECUTION

3.01 EXAMINATION:

Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

Proof-roll sub-base using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

Notify Architect in writing of any unsatisfactory conditions. Do not begin paving installation until these conditions have been satisfactorily corrected.

3.02 SURFACE PREPARATION:

General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

3.03 HOT-MIX ASPHALT PLACING:

Machine place hot-mix asphalt mix on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness, when compacted.

Place hot-mix asphalt base course in number of lifts and thicknesses indicated.

Spread mix at minimum temperature of 250 deg F (121 deg C).

Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.

Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt paving mat.
Place paving in consecutive strips not less than 10 feet (3 m) wide, except where infill edge strips of a lesser width are required.

After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete asphalt base course for a section before placing asphalt surface course.

Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.07 JOINTS:

Construct Joints to ensure continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.

Clean contact surfaces and apply tack coat.

Offset longitudinal joints in successive courses a minimum of 6 inches (150 mm).

Offset transverse joints in successive courses a minimum of 24 inches (600 mm). Construct transverse joints by bulkhead method or sawed vertical face method as described in AI's “The Asphalt Handbook”.

Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.

Compact asphalt at joints to a density within 2 percent of specified course density.

3.08 COMPACTION:

General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

Complete compaction before mix temperature cools to 185 deg F (85 deg C).

Breakdown Rolling: Accomplish breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Repair surfaces by loosening displaced material, filling with hot-mix asphalt, and rerolling to required elevations.

Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling, while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

Average Density: 96 percent of reference laboratory density according to ASTM D 1559, but not less than 94 percent nor greater than 100 percent.

Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while still hot, with back of rake or smooth iron. Compact thoroughly using tamper or other satisfactory method.

Repairs: Remove paved areas that are defective or contaminated with foreign materials. Remove paving course over area affected and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

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

Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.09 INSTALLATION TOLERANCES:

Thickness: Compact each course to produce the thickness indicated within the following tolerances:

- Base Course: Plus or minus 1/2 inch (13 mm).
- Surface Course: Plus 1/4 inch (6 mm), no minus.

Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:

- Base Course: 1/4 inch (6 mm).
- Surface Course: 1/8 inch (3 mm).
- Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch (6 mm).

3.10 PAVEMENT MARKING:

Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

Allow paving to cure for 30 days before starting pavement marking.

Sweep and clean surface to eliminate loose material and dust.

Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer’s recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

3.11 WHEEL STOPs: Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

3.12 SIGNS:
The product shall be installed in conformance with shop drawings and the manufacturer’s specific instructions, conform to ADA requirements for mounting heights where applicable. All braces, clamps, fittings, etc. required for the proper installation shall be furnished and installed as part of this work.

The products shall be installed at locations on the drawings. Any additional work required of other trades to attach this product to the buildings structure or other related equipment shall be furnished and installed as part of this work by the manufacturer and/or general contractor.

3.13 FIELD QUALITY CONTROL:

Testing Agency: The Owner may, at his discretion, engage the services of a qualified independent testing agency to perform field inspections and tests and to prepare test reports. Cost of initial tests will be paid by the Owner.

Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.

For work determined not to conform to specified requirements, additional testing will be performed to determine compliance of corrected Work with specified requirements. Additional testing shall be at the Contractor’s expense.

TESTING REQUIREMENTS SHALL BE AS FOLLOWS:

Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smooth-ness tolerances.

In-Place Density: Samples of un-compacted paving mixtures and compacted pavement will be secured by testing agency according to ASTM D 979.

Reference laboratory density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 1559, and compacted according to job-mix specifications.

In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.

One core sample will be taken for every 1000 sq. yd. (836 sq. m) or less of installed pavement, but in no case will fewer than 3 cores be taken.

Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.
END OF SECTION 02511
SECTION 02751 --- CEMENT CONCRETE PAVEMENT

PART 1   GENERAL

1.01   RELATED DOCUMENTS:

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

1.02   SUMMARY:

This Section includes exterior cement concrete pavement for the following:

Curbs and Gutters.
Walkways Concrete Building Entrances and Ramps.

Related Sections include the following:

Division 2 Section “Earthwork” for subgrade preparation, grading, and sub-base course.

1.03   DEFINITIONS:

Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans.

1.04   SUBMITTALS:

Product Data: For each type of manufactured material and product indicated.

Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

Cementitious materials and aggregates.

Steel reinforcement and reinforcement accessories.

Admixtures.

Curing compounds.
Applied finish materials.
Joint fillers.

1.05   QUALITY ASSURANCE:
Installer Qualifications: An experienced installer who has completed pavement work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

Manufacturer must be certified according to the National Ready Mix Concrete Association's Plant Certification Program.

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

ACI Publications: Comply with ACI 301, “Specification for Structural Concrete”, unless modified by the requirements of the Contract Documents.

1.06 CONCRETE TESTING ALLOWANCE:

Any testing of materials furnishes by this Section of the Specifications shall be provided by the Concrete Testing Allowance specified in Section 03300 – Cast-In-Place Concrete.

1.07 PROJECT CONDITIONS:

Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 PRODUCTS

2.01 FORMS:

Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

Use flexible or curved forms for curves of a radius 100 feet (30.5 m) or less.

Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.02 STEEL REINFORCEMENT:

Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

Reinforcement Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60 (Grade 420), deformed bars; assembled with clips.
Plain Steel Wire:  ASTM A 82, as drawn.

Joint Dowel Bars:  Plain steel bars, ASTM A 615/A 615M, Grade 60 (Grade 420).  Cut bars true to length with ends square and free of burrs.

Bar Supports:  Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement bars, welded wire fabric, and dowels in place.  Manufacture bar supports according to CRSI’s “Manual of Standard Practice” from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:

   Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.03   CONCRETE MATERIALS:

General:  Use the same brand and type of cementitious material from the same manufacturer throughout the Project.

Portland Cement:  ASTM C 150, Type I or II.

Aggregate:  ASTM C 33, uniformly graded, from a single source, with coarse aggregate as follows:

   Maximum Aggregate Size:  3/4 inch (19 mm) nominal.
   Do not use fine or coarse aggregates containing substances that cause spalling.

Water:  ASTM C 94.

2.04   ADMIXTURES:

General:  Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.


High Range, Water-Reducing Admixture:   ASTM C 494, Type F.

Coloring Agents:  See 2.06 Related Materials

2.05   CURING MATERIALS:

Any material below at Contractor’s option.

Absorptive Cover:  AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry.

Moisture-Retaining Cover:  ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

Water:  Potable.
Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, and are limited to the following:

Evaporation Retarder:

- Finishing Aid Concentrate; Burke Group, LLC (The).
- Spray-Film; ChemMasters.
- Eucobar; Euclid Chemical Co.
- E-Con; L&M Construction Chemicals, Inc.

Clear Waterborne Membrane-Forming Curing Compound:

- Aqua Resin Cure; Burke Group, LLC (The).
- Safe-Cure Clear; ChemMasters.
- L&M Cure R; L&M Construction Chemicals, Inc.
- 1100 Clear; W. R. Meadows, Inc.
- Hydro Cure; Unitex.

2.06 RELATED MATERIALS:


Pavement-Marking Paint: Latex, water-base emulsion; ready mixed; complying with FS TT-P-1952.

Color: Blue for handicapped requirements, yellow for fire lanes, white elsewhere.

2.07 CONCRETE MIXES:

Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

Proportion mixes to provide concrete with the following properties:

- Compressive Strength (28 Days): 4000 psi (27.6 Mpa). For curbs, driveway, and dumpster pads.
- Compressive-Strength (28 Days): 3000 psi (20.7 Mpa). For sidewalks, steps, and play areas.
- Slump Limit for Concrete Containing High-Range Water-Reducing Admixture: Not more than 8 inches (200 mm) after adding admixture to plant- or site-verified, 2- to 3-inch (50- to 75-mm) slump.
Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement according to ACI 301 requirements for concrete exposed to deicing chemicals.

Add air-entraining admixture at manufacturer’s prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus or minus 1.5 percent:

- Air Content: 5.5 percent for 1-1/2 inch (38-mm) maximum aggregate.
- Air Content: 6.0 percent for 1-inch (25-mm) maximum aggregate.
- Air Content: 6.0 percent for 3/4-inch (19-mm) maximum aggregate.

2.08 CONCRETE MIXING:

Ready Mixed Concrete: Comply with requirements and with ASTM C 94.

2.09 SIGNS: Refer to Section 02511 – Hot Mix Asphalt Paving

PART 3  EXECUTION

3.01 PREPARATION:

Proof-roll prepared sub-base surface to check for unstable areas and verify need for additional compaction. Proceed with pavement only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

Remove loose material from compacted sub-base surface immediately before placing concrete.

3.02 EDGE FORMS AND SCREED CONSTRUCTION:

Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
Clean forms after each use and coat with form release agent to ensure separation from concrete without damage.

3.03 STEEL REINFORCEMENT:

General: Comply with CRSI’s “Manual of Standard Practice” for fabricating reinforcement and with recommendations in CRSI’s “Placing Reinforcing Bars” for placing and supporting reinforcement.

Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

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.
Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch (50-mm) overlap to adjacent mats.

3.04 JOINTS:

General: Construct construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to enterline, unless otherwise indicated.

When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.

Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.

For concrete work 6" thick or thicker, provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.

Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.

Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

Locate expansion joints at intervals of 50 feet (15.25 m), unless otherwise indicated.

Extend joint fillers full width and depth of joint.

Terminate joint filler less than 1/2 inch (12 mm) but no more than 1 inch (25 mm) below finished surface if joint sealant is indicated.

Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.

Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.

Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary pre-formed cap. Remove protective cap after concrete has been placed on both sides of joint.

Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
Grooved Joints: In walks and patio areas, form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to the following radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces. If location of contraction joints are not shown on drawings, space joints along length of walks equal to width of walk to create square pattern.

Radius: 3/8 inch (10 mm).

Sawed Joints: Where drawings indicate, form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

Edging: Tool edges of pavement, gutters, curbs, steps, and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

Radius: 3/8 inch (10 mm).

3.05 CONCRETE PLACEMENT:

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

Remove snow, ice, or frost from sub-base surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

Moisten sub-base to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.

Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.

Do not add water to concrete during delivery, at Project site, or during placement.

Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.

Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears.
on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading dry-shake surface treatments.

Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.

Slip-Form Pavers: When automatic machine placement is used for pavement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce pavement to required thickness, lines, grades, finish, and jointing as required for formed pavement.

Compact sub-base and prepare subgrade of sufficient width to prevent displacement of paver machine during operations.

Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

When air temperature has fallen to or is expected to fall below 40 deg F (4.4 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. Do not use frozen materials or materials containing ice or snow.

Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows when hot-weather conditions exist:

Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). Chilled mixing water 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.

Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.06 CONCRETE FINISHING:

General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.

Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots, and fill low spots. Refloat surface immediately to uniform granular texture.
Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch (1.6 to 3 mm) deep with a stiff-bristled broom, perpendicular to line of traffic.

3.07 CONCRETE PROTECTION AND CURING:

General: Protect freshly placed concrete from premature drying and hot temperatures. Comply with ACI 306.1 for cold-weather protection and follow recommendations in ACI 305R for hot-weather protection during curing.

Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer’s written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.

Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

- **Moisture Curing:** Keep surfaces continuously moist for not less than seven days with the following materials:
  - Any of the following at the Contractor’s option:
    - Water.
    - Continuous water-fog spray.
    - Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

- **Moisture-Retaining-Cover Curing:** Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

- **Curing Compound:** Apply uniformly in continuous operation by power spray or roller according to manufacturer’s written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.08 PAVEMENT TOLERANCES:

Comply with tolerances of ACI I 1 7 and as follows:

- **Elevation:** 1/4 inch (6 mm).
- **Thickness:** Plus 3/8 inch (9 mm), minus 1/4 inch (6 mm).
Surface: Gap below 10-foot- (3-m-) long, unleveled straightedge not to exceed 1/4 inch (6 mm).

Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch (25 mm).

Vertical Alignment of Tie Bars and Dowels: 1/4 inch (6 mm).

Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch (13 mm).

Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches (6 mm per 300 mm).

Joint Spacing: 3 inches (75 mm).

Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.

Joint Width: Plus 1/8 inch (3 mm), no minus.

3.09 PAVEMENT MARKING:

Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

Sweep and clean surface to eliminate loose material and dust.

Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer’s recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

3.10 SIGNS: Refer to Section “Hot Mix Asphalt Paving”

3.11 FIELD QUALITY CONTROL:

The Contractor shall provide casual labor to assist the testing agency in obtaining samples.

Testing Agency: Owner will select a qualified testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Article.

Testing Services: Testing shall be performed according to the following requirements:

Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C 172, except modified for slump to comply with ASTM C 94.

Slump: ASTM C 143; one test at point of placement for each compressive-strength test, but not less than one test for each day’s pour of each type of concrete. Additional tests will be required when concrete consistency changes.
Air Content: ASTM C 231, pressure method; one test for each compressive-strength test, but not less than one test for each day’s pour of each type of air-entrained concrete.

Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.

Compression Test Specimens: ASTM C 31 /C 31 M; one set of four standard cylinders for each compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.

Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m). One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required.

When frequency of testing will provide fewer than five compressive-strength tests for a given class of concrete, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, current operations shall be evaluated and corrective procedures shall be provided for protecting and curing in-place concrete.

Strength level of concrete will be considered satisfactory if averages of sets of three consecutive compressive-strength test results equal or exceed specified compressive strength and no individual compressive-strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).

Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as the sole basis for approval or rejection.

Cost of testing shall be paid by the Owner.

Additional Tests: Testing agency shall make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, 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. Costs of additional test shall be paid by the Contractor.

3.12 REPAIRS AND PROTECTION:
Remove and replace concrete work that is broken, damaged, or defective, or does not meet requirements in this Section.

Drill test cores where directed by Architect when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

Protect concrete from damage. 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 as they occur.

Maintain concrete work free of stains, discoloration, dirt, and other foreign material. Sweep concrete work not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 02751
SECTION 02900 --- LANDSCAPING - LAWNS

PART 1   GENERAL

1.01   RELATED DOCUMENTS:

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

1.02   SCOPE:

This Section includes furnishing all materials, equipment, and labor necessary for: the treatment of the subgrade established for lawns; finished grading; soil treatment; lawn construction; protections, maintenance, guarantee and replacement of lawns; and all related items required to complete the work shown on the drawings and specified.

1.03 LANDSCAPE ALLOWANCE: Not applicable.

1.04 SUMMARY:

This Section includes the following:

   Lawns.
   Topsoil and soil amendments.
   Fertilizers and mulches.

Related Sections: The following Sections contain requirements that relate to this Section:

   Division 2 Section “Site Clearing” for protection of existing trees and planting, topsoil stripping and stockpiling, and site clearing.

   Division 2 Section “Earthwork” for excavation, filling, rough grading, and subsurface aggregate drainage and drainage backfill.

1.05 SUBMITTALS:

General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

Product certificates signed by manufacturers certifying that their products comply with specified requirements.

   Manufacturer’s certified analysis for standard products.

   Analysis for other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
Label data substantiating that planting materials comply with specified requirements.

Certification of grass seed from seed vendor for each grass-seed mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

Material test reports from qualified independent testing agency indicating and interpreting test results relative to compliance of the following materials with requirements indicated.

- Analysis of existing surface soil.
- Analysis of imported topsoil.

Maintenance instructions recommending procedures to be established by Owner for maintenance of landscaping during an entire year. Submit before expiration of required maintenance periods.

1.06 QUALITY ASSURANCE:

Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful landscape establishment.

Installer’s Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during times that landscaping is in progress.

Topsoil Analysis: Furnish a soil analysis made by architect assigned independent soil-testing agency stating percentages of organic matter, inorganic matter (silt, clay, and sand), deleterious material, pH, and mineral plant-nutrient content of topsoil. Cost of analysis to be paid from Soil Testing Allowance.

Report suitability of topsoil for growth of applicable planting material. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any limestone, aluminum sulfate, or other soil amendments to be added to produce a satisfactory topsoil.

1.07 DELIVERY, STORAGE, AND HANDLING:

Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.

1.08 PROJECT CONDITIONS:

Utilities: Determine location of above grade and underground utilities and perform work in a manner which will avoid damage. Hand excavate, as required. Maintain grade stakes until removal is mutually agreed upon by parties concerned.

Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Architect before planting.
1.09 COORDINATION AND SCHEDULING:

Coordinate installation of planting materials during normal planting seasons for each type of plant material required.

1.10 LAWN MAINTENANCE:

Begin maintenance of lawns immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:

Seeded Lawns: 60 days after date of Substantial Completion of project, or after initial germination of seed, whichever occurs last.

Maintain and establish lawns by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, re-grade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth lawn.

Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawns uniformly moist to a depth of 4 inches (100 mm).

Water lawn at the minimum rate of 1 inch (25 mm) per week.

Mow lawns as soon as there is enough top growth to cut with mower set at specified height for principal species planted. Repeat mowing as required to maintain specified height without cutting more than 40 percent of the grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.

Post-fertilization: Apply fertilizer to lawn after first mowing and when grass is dry.

Use fertilizer that will provide actual nitrogen of at least 1 lb per 1000 sq. ft. (0.5 kg per 100 sq. m) of lawn area.

1.11 INSPECTION FOR ACCEPTANCE:

A. Inspection of the work of Lawns to determine completion of contract work will be made by the Architect at the conclusion of the maintenance period upon written notice requesting such inspection submitted by the Contractor at least 10 days prior to the anticipated date. Prior to the inspection, the Contractor shall rake clean all grassed areas, removing any construction debris and organic materials such as roots, and all rocks and stones larger than 1” in dimension, which have become exposed during the grass germination period. The condition of lawns will be noted and determination made the Architect whether maintenance shall continue in any part.

B. Acceptance: After inspection, the Contractor will be notified in writing by the Architect of the acceptance of all work of this section.

PART 2 PRODUCTS
2.01 GRASS MATERIALS:


Seed Mixture: Provide seed of grass species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on the drawings.

2.02 TOPSOIL:

Topsoil: ASTM D 5268, pH range of 5.5 to 7, 4 percent organic material minimum, free of stones 1 inch (25 mm) or larger in any dimension, and other extraneous materials harmful to plant growth.

Topsoil Source: Reuse surface soil stockpiled on the site. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Supplement with imported topsoil when quantities are insufficient. Clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plan@ growth.

Topsoil Source: If on-site topsoil is insufficient import topsoil from off-site sources at no additional cost to contract. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.

Topsoil Source: At Contractor’s option, amend existing surface soil to produce topsoil. Supplement with imported topsoil when required.

2.03 SOIL AMENDMENTS:

Lime: ASTM C 602, Class T, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 (2.36 mm) sieve and a minimum 75 percent passing a No. 60 (250 micrometer) sieve.

Provide lime in the form of dolomitic limestone.

Aluminum Sulfate: Commercial grade, unadulterated.

Sand: Clean, washed, natural or manufactured sand, free of toxic materials.

Perlite: Horticultural perlite, soil amendment grade.

Peat Humus: Finely divided or granular texture, with a pH range of 6 to 7.5, composed of partially decomposed moss peat (other than sphagnum), peat humus, or reed-sedge peat.

Sawdust or Ground-Bark Humus: Decomposed, nitrogen-treated, of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
Manure: Well-rotted, un-leached stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

Herbicides: EPA registered and approved, of type recommended by manufacturer.

Water: Potable.

2.04 FERTILIZER:

Superphosphate: Commercial, phosphate mixture, soluble; minimum of 20 percent available phosphoric acid.

Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea-form, phosphorus, and potassium in the following composition:

Composition: 10% nitrogen, 10% phosphorous, and 10% potassium, by weight; or, at Contractor’s option, nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

Slow-Release Fertilizer: Granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

Composition: 10% nitrogen, 10% phosphorous, and 10% potassium, by weight; or, at Contractor’s option, nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.05 MULCHES:

Fiber Mulch: Biodegradable dyed-wood cellulose- fiber mulch, nontoxic, free of plant growth- or germination-inhibitors, with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

Asphalt Emulsion Tackifier: Asphalt emulsion, ASTM D 977, Grade SS-1, nontoxic and free of plant growth- or germination-inhibitors.

Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application, nontoxic and free of plant growth- or germination-inhibitors.

2.06 EROSION-CONTROL MATERIALS:

Blankets: Biodegradable wood excelsior, straw, or coconut- fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer’s recommended steel wire staples, 6 inches (150 mm) long.

Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, 0.92 lb per sq. yd. (0.5 kg per sq. m) minimum, with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.
PART 3 EXECUTION

3.00 SCOPE:

All areas not required to be developed otherwise shall be planted to grass.

3.01 EXAMINATION:

Examine areas to receive landscaping for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PLANTING SOIL PREPARATION:

Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.

Mix soil amendments and fertilizers with topsoil at rates indicated or the following schedule. Delay mixing fertilizer if planting does not follow placing of planting soil within seven days.

“Planting Soil Amendments Schedule”:

Lawns: Provide soil amendments in not less than the following quantities:

- Weight of lime per 1000 sq. ft. (100 sq. m): 100 lbs.
- Weight of superphosphate per 1000 sq. ft. (100 sq. m): 15 lbs.
- Weight of commercial fertilizer per 1000 sq. ft. (100 sq. m): 25 lbs.

3.03 LAWN PLANTING PREPARATION:

Limit subgrade preparation to areas that will be planted in the immediate future.

Loosen subgrade to a minimum depth of 4 inches (100 mm). Remove stones larger than 1-1/2 inches (38 mm) in any dimension and sticks, roots, rubbish, and other extraneous materials.

Spread planting soil mixture to depth required to meet thickness, grades, and elevations shown, after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen.

Place approximately 1/2 the thickness of planting soil mixture required. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil mixture.

Preparation of Unchanged Grades: Where lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare soil as follows:

Grade lawn and grass areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the
immediate future. Remove trash, debris, stones larger than 1-1/2 inches (38 mm) in any dimension, and other objects that may interfere with planting or maintenance operations.

Moisten prepared lawn areas before planting when soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

Restore prepared areas if eroded or otherwise disturbed after fine grading and before planting.

3.04 SEEDING NEW LAWNS:

Sow seed with a spreader or a seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in 2 directions at right angles to each other.

Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.

Sow seed at the following rates:

Seeding Rate: 4 to 5 lb per 1000 sq. ft. (2 to 2.5 kg per 100 sq. m)

Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with fine spray.

Protect seeded areas with slopes less than 1:6 against erosion by spreading straw mulch after completion of seeding operations. Spread uniformly at a minimum rate of 2 tons per acre (45 kg per 100 sq. m) to form a continuous blanket 1-1/2 inches (38 mm) loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.

Anchor straw mulch by crimping into topsoil by suitable mechanical equipment, and/or by spraying with asphalt-emulsion tackifier at the rate of 10 to 13 gal. per 1000 sq. ft. (41 to 53 L per 100 sq. m).

Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

3.05 HYDROSEEDING NEW LAWNS: Not applicable.

3.06 CLEANUP AND PROTECTION:

During landscaping, keep pavements clean and work area in an orderly condition.

Protect landscaping from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

3.07 DISPOSAL OF SURPLUS AND WASTE MATERIALS:

Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION 02900
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SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

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

1.2 SUMMARY
   A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.
   B. Related Sections include the following:
      1. Division 2 Section “Portland Cement Concrete Pavement”
      2. Division 2 Section “Concrete Curb, Curb and Gutter, and Gutter”

1.3 DEFINITIONS
   A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.4 SUBMITTALS
   A. Product Data: For each type of manufactured material and product indicated.
   B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
      1. Indicate amounts of mix water to be withheld for later addition at Project site.
   C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.
   D. Formwork Shop Drawings: Not required.
   E. Welding Certificates: Copies of certificates for welding procedures and personnel.
F. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:

G. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Cementitious materials and aggregates.
2. Form materials and form-release agents.
3. Steel reinforcement and reinforcement accessories.
4. Fiber reinforcement.
5. Admixtures.
6. Waterstops.
7. Curing materials.
8. Floor and slab treatments.
10. Adhesives.
11. Vapor retarders.
12. Epoxy joint filler.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer must be certified according to the National Ready Mixed Concrete Association’s Certification of Ready Mixed Concrete Production Facilities.

C. Concrete Testing:

1. A Concrete Testing Laboratory will be selected by the Architect. Invoices for the testing services shall be sent directly to the Architect. Architect shall forward to Owner for payment. The Contractor shall provide access to the site and causal labor to assist in obtaining cylinders. The Contractor shall notify the testing lab in a timely manner when concrete is to be poured.

2. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
   a. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
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."

F. Mockups: Not required.

G. Pre-installation Conference: Not required.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

   1. Plywood, metal, or other approved panel materials.

B. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.


E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

   1. Furnish units that will leave no corrodible metal closer than 1 inch (25 mm) to the plane of the exposed concrete surface.
   2. Furnish ties that, when removed, will leave holes not larger than 1 inch (25 mm) in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Steel Bar Mats: ASTM A 184/A 184M, assembled with clips.

1. Steel Reinforcement: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed bars.

C. Plain-Steel Wire: ASTM A 82, as drawn.

D. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.

B. Joint Dowel Bars: Plain-steel bars, ASTM A 615/A 615M, Grade 60 (Grade 420). Cut bars true to length with ends square and free of burrs.

2.4 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I/II.

B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:

1. Class: Severe weathering region, but not less than 3S.
2. Nominal Maximum Aggregate Size: 1 inch (25 mm).

C. Water: Potable and complying with ASTM C 94.

2.5 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
C. Water-Reducing Admixture: ASTM C 494, Type A.
D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

2.6 WATERSTOPS
A. Self-Expanding Strip Waterstops: Manufactured rectangular or trapezoidal strip, sodium bentonite or other hydrophylic material for adhesive bonding to concrete.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   a. Volclay Waterstop-RX; Colloid Environmental Technologies Co.
   b. Hydrotite; Greenstreak.
   c. Mirastop; Mirafi Moisture Protection, Div. of Royal Ten Cate (USA), Inc.

2.7 VAPOR RETARDERS
A. See Division 7 Section “Waterproofing and Dampproofing”
B. Granular Fills: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2 inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-m) sieve.

2.8 FLOOR AND SLAB TREATMENTS: Not required.

2.9 CURING MATERIALS
A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry.
C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
D. Water: Potable.
E. Clear, Solvent-Borne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 22 percent solids.
H. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

I. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

J. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

K. Products: Subject to compliance with requirements, provide one of the following:

1. Evaporation Retarder:
   a. Cimfilm; Axim Concrete Technologies.
   b. Finishing Aid Concentrate; Burke Group, LLC (The).
   c. Spray-Film; ChemMasters.
   d. Aquafilm; Conspec Marketing & Manufacturing Co., Inc.
   e. Sure Film; Dayton Superior Corporation.
   f. Eucobar; Euclid Chemical Co.
   g. Vapor Aid; Kaufman Products, Inc.
   h. Lambco Skin; Lambert Corporation.
   i. E-Con; L&M Construction Chemicals, Inc.
   j. Confilm; Master Builders, Inc.
   k. Waterhold; Metalcrete Industries.
   l. Rich Film; Richmond Screw Anchor Co.
   m. SikaFilm; Sika Corporation.
   n. Finishing Aid; Symons Corporation.
   o. Certi-Vex EnvioAssist; Vexcon Chemicals, Inc.

2. Clear, Solvent-Borne, Membrane-Forming Curing Compound:
   a. AH Clear Cure; Anti-Hydro International, Inc.
   b. Spartan-Cote; Burke Group, LLC (The).
   c. Spray-Cure & Seal 15; ChemMasters.
   d. Conspec #1-15 percent solids; Conspec Marketing & Manufacturing Co., Inc.
   e. Day-Chem Cure and Seal; Dayton Superior Corporation.
   f. Diamond Clear; Euclid Chemical Co.
   g. Nitocure S; Fosroc.
   h. Cure & Seal 309; Kaufman Products Inc.
   i. Lambco 120; Lambert Corporation.
   j. L&M Dress & Seal 18; L&M Construction Chemicals, Inc.
   k. CS-309; W. R. Meadows, Inc.
   l. Seal N Kure; Metalcrete Industries.
   m. Rich Seal 14 percent UV; Richmond Screw Anchor Co.
   n. Kure-N-Seal; Sonneborn, Div. of ChemRex, Inc.
   o. Flortec 14; Sternson Group.
   p. Cure & Seal 14 percent; Symons Corporation.
q. Clear Seal 150; Tamms Industries Co., Div. of LaPorte Construction Chemicals of North America, Inc.
r. Acrylic Cure; Unitex.
s. Certi-Vex AC 309; Vexcon Chemicals, Inc.

3. Clear, Waterborne, Membrane-Forming Curing Compound:
   a. AH Clear Cure WB; Anti-Hydro International, Inc.
   b. Klear Kote WB II Regular; Burke Chemicals.
   c. Safe-Cure & Seal 20; ChemMasters.
   d. High Seal; Conspec Marketing & Manufacturing Co., Inc.
   e. Safe Cure and Seal; Dayton Superior Corporation.
   f. Aqua Cure VOX; Euclid Chemical Co.
   g. Cure & Seal 309 Emulsion; Kaufman Products Inc.
   h. Glazecote Sealer-20; Lambert Corporation.
   i. Dress & Seal WB; L&M Construction Chemicals, Inc.
   j. Vocomp-20; W. R. Meadows, Inc.
   k. Metcure; Metalcrete Industries.
   l. Cure & Seal 150E; Nox-Crete Products Group, Kinsman Corporation.
   m. Rich Seal 14 percent E; Richmond Screw Anchor Co.
   n. Kure-N-Seal WB; Sonneborn, Div. of ChemRex, Inc.
   o. Florseal W.B.; Sternson Group.
   p. Cure & Seal 14 percent E; Symons Corporation.
   q. Seal Cure WB 150; Tamms Industries Co., Div. of LaPorte Construction Chemicals of North America, Inc.
   r. Hydro Seal; Unitex.
   s. Starseal 309; Vexcon Chemicals, Inc.

4. Clear, Waterborne, Membrane-Forming Curing Compound, 18 to 22 Percent Solids:
   a. Klear Kote WB II 20 percent; Burke Chemicals.
   b. Safe-Cure & Seal 20; ChemMasters.
   c. Conspec 21; Conspec Marketing & Manufacturing Co., Inc.
   d. Diamond Clear VOX; Euclid Chemical Co.
   e. SureCure Emulsion; Kaufman Products Inc.
   f. Glazecote Sealer-20; Lambert Corporation.
   g. Dress & Seal WB; L&M Construction Chemicals, Inc.
   h. Vocomp-20; W. R. Meadows, Inc.
   i. Metcure 0800; Metalcrete Industries.
   j. Cure & Seal 200E; Nox-Crete Products Group, Kinsman Corporation.
   k. Rich Seal 18 percent E; Richmond Screw Anchor Co.
   l. Kure-N-Seal W; Sonneborn, Div. of ChemRex, Inc.
   m. Florseal W.B.; Sternson Group.
   n. Cure & Seal 18 percent E; Symons Corporation.
   o. Seal Cure WB STD; Tamms Industries Co., Div. of LaPorte Construction Chemicals of North America, Inc.
   p. Hydro Seal 800; Unitex.
   q. Starseal 0800; Vexcon Chemicals, Inc.
5. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound:
   a. Spray-Cure & Seal Plus; ChemMasters.
   b. UV Super Seal; Lambert Corporation.
   c. Lumiseal Plus; L&M Construction Chemicals, Inc.
   d. CS-309/30; W. R. Meadows, Inc.
   e. Seal N Kure 30; Metalcrete Industries.
   f. Rich Seal 31 percent UV; Richmond Screw Anchor Co.
   g. Cure & Seal 31 percent UV; Symons Corporation.
   h. Certi-Vex AC 1315; Vexcon Chemicals, Inc.

6. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound:
   a. Klear-Kote Cure-Sealer-Hardener, 30 percent solids; Burke Group, LLC (The).
   b. Polyseal WB; ChemMasters.
   c. UV Safe Seal; Lambert Corporation.
   d. Lumiseal WB Plus; L&M Construction Chemicals, Inc.
   e. Vocomp-30; W. R. Meadows, Inc.
   f. Metcure 30; Metalcrete Industries.
   g. Vexcon Starseal 1315; Vexcon Chemicals, Inc.

2.10 RELATED MATERIALS


M. Epoxy Joint Filler: Two-component, semi-rigid, 100 percent solids, epoxy resin with a Shore A hardness of 80 per ASTM D 2240.

N. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

O. Reglets: Not required.

P. Dovetail Anchor Slots: Not required.

2.11 REPAIR MATERIALS

Q. Repair Underlayment for Concrete Floors receiving Overlaid Finish Material: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

R. Repair Topping for Exposed Concrete Floors: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6 mm).

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm) or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5700 psi (39 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.12 CONCRETE MIXES

S. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:

1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.

T. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.

U. Footings and Foundation Walls: Proportion normal-weight concrete mix as follows:

2. Maximum Slump: 5 inches (125 mm).

V. Slab-on-Grade: Proportion normal-weight concrete mix as follows:

3. Maximum Slump: 5 inches (125 mm).

W. Suspended Slabs: Proportion normal-weight concrete mix as follows:

2. Maximum Slump: 5 inches (125 mm).
3. Maximum Slump for Concrete Containing High-Range Water-Reducing Admixture: 8 inches (200 mm) after admixture is added to concrete with 2- to 4-inch (50- to 100-mm) slump.

X. Building Frame Members: Proportion normal-weight concrete mix as follows:

2. Maximum Slump: 5 inches (125 mm).
3. Maximum Slump for Concrete Containing High-Range Water-Reducing Admixture: 8 inches (200 mm) after admixture is added to concrete with 2- to 4-inch (50- to 100-mm) slump.
Y. Cementitious Materials: For concrete exposed to deicers, limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements.

Z. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus 1 or minus 1.5 percent, unless otherwise indicated:
1. Air Content: 6 percent for 1-inch- (25-mm-) nominal maximum aggregate size.

AA. Do not air entrain concrete to trowel-finished interior floors and suspended slabs. Do not allow entrapped air content to exceed 3 percent.

BB. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

CC. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.

2.13 FABRICATING REINFORCEMENT

DD. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.14 CONCRETE MIXING

EE. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.

FF. Project-Site Mixing: Not allowed.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
1. Class A, 1/8 inch (3 mm): Not required
2. Class B, 1/4 inch (6 mm) for concrete receiving applied finish.
3. Class C, 1/2 inch (13 mm) for exposed concrete faces.
4. Class D, 1 inch (25 mm) for unexposed faces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Do not chamfer corners or edges of concrete walls.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer’s written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor bolts, accurately located, to elevations required.
2. 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, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.
3.3 REMOVING AND REUSING FORMS

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete 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 hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:
   1. 28-day design compressive strength.

C. 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-release agent.

D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

A. Comply with ACI 318 (ACI 318M), ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 VAPOR RETARDERS

A. Vapor Retarder: Place, protect, and repair vapor-retarder sheets according to ASTM E 1643 and manufacturer’s written instructions.

3.6 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
   1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Shop- or field-weld reinforcement according to AWS D1.4, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.

2. Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.

3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

2. Terminate full-width joint-filler strips not less than 1/2 inch (12 mm) or more than 1 inch (25 mm) below finished concrete surface where joint sealants, specified in Division 7 Section "Joint Sealants," are indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated.

1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 WATERSTOPS

A. Flexible Waterstops: Install in construction joints as indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's written instructions.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, bonding or mechanically fastening and firmly pressing into place. Install in longest lengths practicable.

3.9 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.

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

D. Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm) and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints. Do not allow concrete to drop more than 60 inches.

1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
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 vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. 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 constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 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.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

G. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water 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 steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.10 FINISHING FORMED SURFACES
A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.

B. Smooth-Formed Finish: Not required.

3.11 FINISHING FLOORS AND SLABS

A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes.

1. Apply scratch finish to surfaces indicated and to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

2. Finish surfaces to the following tolerances, measured within 24 hours according to ASTM E 1155/E 1155M for a randomly trafficked floor surface:

   a. For Floors Receiving Carpet or No Other Finish: Specified overall values of flatness, $F(F)$ 25; and levelness, $F(L)$ 20; with minimum local values of flatness, $F(F)$ 17; and levelness, $F(L)$ 15.

   b. For All Other Areas: Specified overall values of flatness, $F(F)$ 35; and levelness, $F(L)$ 25; with minimum local values of flatness, $F(F)$ 24; and levelness, $F(L)$ 17; for slabs-on-grade.

E. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either
thickset or thin-set method. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

G. Slip-Resistive Aggregate Finish: Not required.

H. Mineral Dry-Shake Floor Hardener Finish: Not required.

3.12 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, 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 indicated 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 at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.13 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after
loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.

3. Curing Compound for Floors receiving Floor Finish Materials or Overlayment: Apply uniformly in continuous operation by power spray or roller according to manufacturer’s written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

4. Curing and Sealing Compound for Exposed Concrete Floros: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer’s written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.14 LIQUID FLOOR TREATMENTS Not required

3.15 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer’s written instructions.
1. Defer joint filling until concrete has aged at least six months. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid epoxy joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.16 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.2-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spills, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension in solid concrete but not less than 1 inch (25 mm) in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area 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.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas 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.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer’s written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer’s written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4 inch (19 mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.17 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

B. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Article.

C. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day’s pour of each concrete mix exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.

4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.

D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

E. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect. Additional testing shall be at the Contractor’s expense.

H. General Contractor shall provide a job mock-up panel of sealed colored concrete. In a location designated by the Architect, place a minimum 100 sq. ft. floor mock-up using actual job site materials and installation procedures proposal for use in the project. Revise materials and procedures as directed by Architect to obtain acceptable finish surface. Do not destroy the approved mock-up panel until floor has been accepted. Maintain the same controls and procedures used in the acceptable mock-up throughout the project. General Contractor shall consult with manufacturer of concrete, color mix, and surface hardener for aid in instructing the proper use of the
products. Engage an experienced installer who has specialized in the application of floor finishes similar to that required for this project.

General Contractor shall protect all slabs during construction and shall provide a thoroughly clean slab acceptable to Owner at the end of project. If slab is unacceptable it is Contractor’s responsibility to remove sealant, provide slab remediation as required, and reapply sealant as required to provide an acceptable finish product.

END OF SECTION 03300
SECTION 06105---MISCELLANEOUS CARPENTRY:

PART 1  GENERAL

1.01 RELATED DOCUMENTS:

Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.02 SUMMARY:

This section includes the following:

- Rough carpentry work not specified elsewhere and generally intended for support of other work.
- Wood furring.
- Wood equipment bases.
- Miscellaneous blocking, grounds, nailers, and panels.

Related Sections: N/A

1.03 SUBMITTALS:

General: Submit the following according to conditions of contract and Division 1 Specification Sections.

Wood treatment data for chemical treatment manufacture. Include chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated material.

- Preservative Treatment: Include certification by treatment plant stating type of solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
- Waterborne Preservative Treatment: Include certification that moisture content of treated wood was reduced to levels specified prior to shipment to Project site.
- Fire Retardant Treatment: Include certification by treating plant that treated wood complies with specified requirements.
- Warranty: Include warranty of chemical treatment manufacturer for each type of treatment.

1.04 DELIVERY, STORAGE, AND HANDLING:

Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack material above ground level on uniformly spaced supports to prevent
For material pressure treated with waterborne chemicals, place spacers between each bundle for air circulation.

PART 2 PRODUCTS

2.01 LUMBER, GENERAL:

Standards: Furnish lumber manufactured to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

Grade Stamps: Furnish lumber with each piece factory-marked with grade stamp of inspection agency that indicates grading agency, grade, species, moisture content at time of surfacing and mill.

For exposed lumber, furnish pieces marked on ends or back of each piece.

Sizes: Provide nominal sizes indicated, complying with PS 20 except where actual sizes are specifically noted as being required.

Surfacing: Dressed lumber, S4S, unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED CONDITIONS:

Species: Any wood species listed by PS 20.

Moisture Content: S-DRY, KD 19 or MC 19 (19 percent maximum moisture content).

Grade: No. 2 or standard grade.

2.03 DIMENSION LUMBER FOR EXPOSED CONDITIONS: Not applicable.

2.04 BOARDS FOR CONCEALED CONDITIONS:

Species: Any wood species listed by PS 20.

Moisture Content: S-DRY, KD 19 or MC 19 (19 percent maximum moisture content).

Grade: No. 2, 2 common, or Construction Boards.

2.06 CONSTRUCTION PANELS:

Standards: Comply with requirements of PS 1 Voluntary Product Standard "Construction and Industrial Plywood" for veneer plywood and APA PRP-108 "Performance Standards and Policies for Structural-Use
Panels" for performance rated panels.

Trademark: Furnish construction panels that are each factory-marked with APA trademark for grade specified.

Miscellaneous Concealed Plywood: C-C Plugged Exterior, thickness as indicated but not less than 1/2 inch nominal.

2.07 PARTICLEBOARD: Not applicable.

2.08 FASTENERS:

General: Where miscellaneous carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.

Nails, Wire, Brads and Staples: FS FF-N-105.

Bolts: ASTM A 307, Grade A; with ASTM A 563 hex nuts and flat washers.

2.09 PRESERVATIVE WOOD TREATMENT BY PRESSURE PROCESS:

Preservative Treatment by Pressure Process: AWPA C2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).

Above-Ground Wood Treatment: Pressure treat with waterborne preservatives to a minimum retention of 0.25 pcf.

Kiln-dry interior dimension lumber after treatment to 19 percent maximum moisture content.

Kiln-dry interior construction panels after treatment to 15 percent maximum moisture content.

Treat wood items indicated and in the following circumstances:

In contact with masonry or concrete.
Within 18 inches of grade.

Ground-Contact Wood Treatment: Pressure treat with waterborne preservatives to a minimum retention of 0.40 pcf.

2.10 FIRE-RETARDANT TREATMENT BY PRESSURE PROCESS:

General: Identify treated wood with appropriate classification marking of Underwriters Laboratories Inc. or other testing and inspection agency acceptable to authorities having jurisdiction.
Dimension Lumber: Comply with AWPA C20.

Plywood: Comply with AWPA C27.
Treatment Type: Interior Type A for protected wood and Exterior Type for wood exposed to weather.

Inspect each piece after drying and discard damaged or defective pieces.

NOTE: All nailers, blocking, dimensional lumber and wood construction panels installed as part of roofing assembly shall be Fire Retardant.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL:

Discard units of material with defects that impair quality of miscellaneous carpentry and in sizes that would require an excessive number or poor arrangement of joints.

Cut and fit miscellaneous carpentry accurately. Install members plumb and true to line and level.

Coat cut edges of preservative treated wood to comply with AWPA M4.

Securely fasten miscellaneous carpentry as indicated and according to applicable codes and recognized standards.

Countersink nail heads on exposed carpentry work and fill holes.

Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

3.02 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS:

Install where shown and where required for screeding or attachment of other work. Cut and shape to required size. Coordinate location with other work involved.

Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated.

3.03 WOOD FURRING:

General: Install at spacing indicated, with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.

Furring to Receive Plywood Paneling: Install 1-by-3 inch furring at 2 feet o.c., horizontally and vertically. Select furring strips for freedom from knots that could cause bent-over nails and damage to paneling.

Furring to Receive Gypsum Board: Install 1-by-2 inch furring at 16 inches o.c., vertically.
Furring to Receive Plaster Lath: Install 1-by-2 inch furring at 16 inches o.c., vertically.

3.04 CONSTRUCTION PANELS:

Comply with applicable installation recommendations in APA Form E30 "Design/ Construction Guide--Residential & Commercial."

END OF SECTION 06105
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SECTION 06250---FINISH CARPENTRY:

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SCOPE:

This Contractor shall furnish all materials, labor, scaffolding, equipment, etc., for the installation, erection and completion of all finish woodwork, hardware, wood doors and frames, wood paneling, millwork and all other kindred items generally classed under this head.

1.03 WORKMANSHIP FOR FINISHED WOODWORK:

(A) All work called for herein shall be of the type and quality equal in all respects to the quality standards for Custom Grade Millwork as detailed and specified by the Architectural Woodwork Institute in the current issue of Quality Standards Illustrated and shall be executed by manufacturers who have in operation a plant of sufficient size to completely manufacture the work required to be furnished.

(B) As far as practicable, concealed fastenings shall be used for joining and fastening of wood, but where this is impossible, the means of securing shall be placed in inconspicuous places as directed or approved.

1.04 NAILING IN CONCRETE BLOCKS:

All wood trim and other finish woodwork installed on concrete block shall be nailed directly into the block with the proper size case hardened cut nails, except where wood grounds are shown for finishing nailing. Holes shall be drilled for cut nails slightly smaller than nails to prevent splitting of wood.

1.05 INTERIOR WOOD FINISH:

All hardwood finish woodwork, called for on the drawings, shall be clear grade, kiln dried and seasoned, red oak.

All softwood solid wood finish throughout the entire building, not otherwise shown or specified, shall be kiln dried and seasoned B and Better, Appalachian Poplar.

All wood trim and wood finish of all descriptions shall be machine sanded by the millwork contractor and all further necessary hand sanding on the job shall be done by the Contractor.

All wood finish is to be fabricated in accordance with the details and erected in a first class manner by skilled mechanics. All finishing nails shall be set.
1.06 PLYWOOD FINISH:

All hardwood plywood shall be plane sliced red oak.

Paint grade plywood, where called for on the drawings, shall be unselected hardwood for paint finish.

PART 2 PRODUCTS

2.01 DOORS:

See Division 8 for Wood Doors.

2.02 PRIMING:

Prime the back of all wood trim which is to be installed against masonry walls before installation.

2.03 INSTALLATION:

All finished work shall be erected plumb, true and square, properly secured to grounds and otherwise substantially fastened in place as best suited for each condition and as necessary to permanently hold it to correct surfaces, lines and levels.

The contractor shall do all fitting and cutting of woodwork required to complete the work of the contract and to accommodate the work of all other trades. All cutting and fitting shall be neatly and accurately done; all members shall be securely fastened in place and all exposed nails shall be set for putty stopping. All finished surfaces shall be free of tool marks, open joints or other objectionable imperfections.

Do all necessary drilling of metal required for the proper installation of the work specified under this section.

Furnish all nails, screws, bolts, anchors, ties, clips and other accessories required for the proper installation of the work. Anchors or other items required to be built in with the masonry shall be furnished in ample time for building in and the contractor shall supervise their installation to insure proper location.

Cut for, fit and install all finished hardware for all wood doors, cabinets, shelving and all other woodwork installed throughout the building. Special care shall be given to the installation of floor checks and overhead door closers for proper operation on doors. Special care shall be exercised to install hardware properly and to make whatever adjustments necessary due to imperfect alignment of templates, cuts, etc. At completion of the job all hardware shall be examined and tested, oiled, eased and otherwise handled and at completion shall be free of scratches, dents or other imperfections. Knobs and handles shall be kept covered until completion of the painting work.

2.04 STORAGE:

All finish woodwork shall be kept in dry storage until plaster is completed, windows installed, glazing completed and building has dried out thoroughly and is in satisfactory condition for the delivery and erection of same.
PART 3 EXECUTION:

3.01 PREPARATION:

Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

Pre-Installation Meeting: Meet at the project site prior to delivery of architectural woodwork and review the coordination and environmental controls required for proper installation and ambient conditioning in the areas to receive the work.

Include in the meeting the Contractor, the Architect and other Owner Representatives (if any), the Installers of architectural woodwork, wet work such as plastering, other finishes, painting, mechanical work and electrical work, and the firms or persons responsible for the continued operation (whether temporary or permanent) of the HVAC system as required to maintain temperature and humidity conditions. Proceed with the woodwork installation only when everyone concerned agrees that the required ambient conditions can be properly maintained.

Deliver inserts and similar anchoring devices to be built into substrates, well in advance of the time substrates are to be built.

Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

3.02 INSTALLATION:

Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including countertops); and with 1/32" maximum offset in flush adjoining surfaces, 1/8" maximum offsets in revealed adjoining surfaces.

Scribe and cut work to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.

3.03 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

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

Clean hardware, lubricate and make final adjustments for proper operation.

Clean woodwork on exposed and semi-exposed surfaces. Touch-up finishes to restore damaged or soiled areas.
Complete the finishing work specified as work of this section, to whatever extent not completed at the shop or prior to installation of woodwork.

Adjust casework and hardware so that doors and drawers operate smoothly and with tolerances as established by Standards. Lubricate operating hardware as recommended by manufacturer.

Protection: Advise Contractor of procedures and precautions for protection of materials and installed woodwork from damage by the work of other trades until acceptance of the work by the Owner. Advise Contractor of the required temperature/humidity conditions which must be maintained during the remainder of the construction period in areas of architectural woodwork installations.

END OF SECTION 06250
SECTION 06651—SOLID SURFACE FABRICATIONS

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following horizontal and trim solid surface product types.

1. Countertops in toilets – Included in Alternate Bid #2

B. Related Sections include the following:

1. Division 6 Section “Rough Carpentry” for Blocking.

C. Alternates:

1. Refer to Division 1 Section “Alternates” for description of work in this Section affected by alternates.

1.3 DEFINITION

A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.4 SUBMITTALS

A. Product data:

1. For each type of product indicated provide manufacturer’s product data.

B. Shop drawings:

1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.

   a. Show full-size details, edge details, thermoforming requirements, attachments, etc.

   b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.

   c. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in solid surface.
C. Samples:

1. For each type of product indicated.
   a. Submit minimum 6-inch by 6-inch sample in specified gloss.
   b. Cut sample and seam together for representation of inconspicuous seam.
   c. Indicate full range of color and pattern variation.

2. Approved samples will be retained as a standard for work.

C. Product data:

1. Indicate product description, fabrication information and compliance with specified performance requirements.

D. Product certificates:

1. For each type of product, signed by product manufacturer.

E. Manufacturer certificates:

1. Signed by manufacturers certifying that they comply with requirements.

F. Maintenance data:

1. Submit manufacturer’s care and maintenance data, including repair and cleaning instructions.
   a. Maintenance kit for finishes shall be submitted.

2. Include in project closeout documents.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.

B. Fabricator/installer qualifications:

1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.
C. Applicable standards:

1. Standards of the following, as referenced herein:
   a. American National Standards Institute (ANSI)
   b. American Society for Testing and Materials (ASTM)
   c. National Electrical Manufacturers Association (NEMA)
   d. NSF International

2. Fire test response characteristics:
   a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
      1) Flame Spread Index: 25 or less.
      2) Smoke Developed Index: 450 or less.

D. Job mock-up:

1. Prior to fabrication of architectural millwork, erect sample unit to further verify selections made under sample submittals and to demonstrate the quality of materials and execution.

2. Mock-up shall be for one window sill of each type and one counter top.

3. Build the mock-up to comply with the contract documents and install in a location as directed by the architect.

4. Notify the architect two weeks in advance of the date of when the mock-up will be delivered.

5. Should mock-up not be approved, re-fabricate and reinstall until approval is secured.
   a. Remove rejected units from project site.

6. After approval, the mock-up may become a part of the project. Approved mock-up must be protected as required from any type of damage until final acceptance.

7. This mock-up, once approved, shall serve as a standard for judging quality of all completed units of work.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver no components to project site until areas are ready for installation.
B. Store components indoors prior to installation.
C. Handle materials to prevent damage to finished surfaces.
   1. Provide protective coverings to prevent physical damage or staining following
      installation for duration of project.

1.7 WARRANTY

A. Provide manufacturer’s warranty against defects in materials.
   1. Warranty shall provide material and labor to repair or replace defective
      materials.
   2. Damage caused by physical or chemical abuse or damage from excessive heat
      will not be warranted.

B. Installed Warranty:
   1. Fabrication and installation must be performed by a DuPont Certified
      Fabrication/Installation source who will provide a brand plate for the
      application.
   2. This warranty covers all fabrication and installation performed by the
      certified/approved source subject to the specific wording contained in the
      Installed Warranty Card.

C. Manufacturer’s warranty period:
   1. Ten years from date of substantial completion.

1.8 MAINTENANCE

A. Provide maintenance requirements as specified by the manufacturer.

PART 2 — PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
   1. Subject to compliance with requirements, provide products by one of the
      following:
      a. Corian® solid surfaces from the DuPont company (basis of
         design).
      b. Gibraltar acrylic solid surfaces from Wilsonart.
      c. Hi-macs acrylic solid surfaces from LG.
2.2 MATERIALS

A. Solid polymer components

1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.

2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.

B. Thickness:

1. Thickness shall be provided as recommended by manufacturer for each installation but no less than as indicated on drawings.

C. Edge treatment:

1. Edge treatment shall be as indicated on drawings.

G. Backsplash:

1. Applied.

H. Sidesplash:

1. Applied.

I. Performance characteristics:

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Result</th>
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<tr>
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<td>ASTM D 638</td>
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<td>Tensile Modulus</td>
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<tr>
<td>Smoke Developed Index</td>
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</table>

† Approximate weight per square foot: 1/4" (6 mm) 2.2 lbs., 1/2" (12.3 mm) 4.4 lbs.

Shapes meet or exceed the ANSI Z124.3 and ANSI Z124.6 standards for plastic sinks and lavatories. NEMA results based on the NEMA LD 3-2000

### 2.3 ACCESSORIES

A. Joint adhesive:

1. Manufacturer’s standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.

B. Sealant:

1. Manufacturer’s standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

C. Conductive tape:

1. Manufacturer’s standard aluminum foil tape, with required thickness, for use with cutouts near heat sources.
D. Insulating felt tape:

1. Manufacturer’s standard for use with conductive tape in insulating solid surface material from adjacent heat source.

2.4 FACTORY FABRICATION

A. Shop assembly

1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer’s printed instructions and technical bulletins.

2. Form joints between components using manufacturer’s standard joint adhesive without conspicuous joints.
   a. Reinforce with strip of solid polymer material, 2” wide.

3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.

4. Rout and finish component edges with clean, sharp returns.
   a. Rout cutouts, radii and contours to template.
   b. Smooth edges.
   c. Repair or reject defective and inaccurate work.

2.5 FINISHES

A. Color:

1. Colors shall be selected by Architect from the manufacturer’s complete and full line selection of colors for material specified.

B. Finish:

1. Provide surfaces with a uniform finish.

PART 3 — EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION
A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

1. Provide product in the largest pieces available.

2. Form field joints using manufacturer’s recommended adhesive, with joints inconspicuous in finished work.
   a. Exposed joints/seams shall not be allowed.

3. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.

4. Cut and finish component edges with clean, sharp returns.

5. Rout radii and contours to template.

6. Anchor securely to base cabinets or other supports.

7. Align adjacent countertops and form seams to comply with manufacturer’s written recommendations using adhesive in color to match countertop.

8. Carefully dress joints smooth, remove surface scratches and clean entire surface.

9. Install countertops with no more than 1/8-inch (3 mm) sag, bow or other variation from a straight line.

B. Applied sidesplashes:

1. Install applied sidesplashes at all walls and adjacent millwork using manufacturer’s standard color-matched silicone sealant.

2. Adhere applied sidesplashes to countertops using manufacturer’s standard color-matched silicone sealant.

3.3 REPAIR

A. Repair or replace damaged work which cannot be repaired to architect’s satisfaction.

3.4 CLEANING AND PROTECTION

A. Keep components clean during installation.

B. Remove adhesives, sealants and other stains.
SECTION 07550---CAULKING AND SEALANTS:

PART 1  GENERAL

1.01  SCOPE OF WORK:

A.  Extent:  The work required under this section consists of the complete furnishing, installation and finishing of all exterior and interior caulking as indicated on the drawings or specified herein.

B.  List of Items Included:  Without restricting the volume or generality of the above "Extent", the work to be performed under this section shall include, but is not limited to, the following:

1.  Caulking between all metal door and window frames and masonry or concrete or other materials.
2.  All joint filler.
3.  All crevices formed by the junction of two dissimilar materials.
4.  Caulking of all metal thresholds.
5.  All other miscellaneous caulking required by the drawings and necessary for a complete watertight job.

C.  Work Not Included:  Caulking and sealants furnished and installed as part of roofing system or other related assemblies and specified elsewhere in these specifications.

1.02  GENERAL REQUIREMENTS:

A.  The caulking work shall be performed by a Contractor who is regularly engaged and specializes in work of the character required by the contract and in the application of the materials specified herein. Material shall be delivered to job in manufacturer's original unopened containers with manufacturer's brand and name clearly marked thereon.

B.  The materials and methods shall be as specified herein, unless they are contrary to the manufacturer's directions or to approved trade practice; or unless the Contractor believes they will not produce a permanent and watertight job which he will guarantee as required. Where any of the above conditions occur, the Contractor shall notify the Architect in writing. Deviation from the procedure specified will be permitted only upon Architect's approval and providing the work is guaranteed by the Contractor as specified.

C.  If, prior to beginning work, the Contractor does not notify the Architect in writing of any proposed changes, it will be assumed that he agrees that the materials and methods specified will produce the results desired, and that he will furnish the required guarantee.

D.  The Contractor, if requested, shall furnish an affidavit from the Manufacturer, certifying that the materials or product delivered to the job meets the requirements specified. However, such certification shall not relieve the Contractor from the responsibility of complying with any added requirements specified herein.

1.03  ACCEPTANCE OF SURFACES TO RECEIVE CAULKING:
A. Before beginning work, the caulking subcontractor shall inspect surfaces to receive the caulking specified; he shall notify the Architect and the General Contractor in writing of any serious defects or conditions that will interfere with, or prevent, a satisfactory installation. The beginning of application work shall imply acceptance of the surfaces to receive the caulking.

PART 2 PRODUCTS

2.01 MATERIALS:

A. Exterior caulking shall be one of the following: "790 Series" as manufactured by Dow Corning, "890 Series" as manufactured by Pecora Chemical Corporation, "Omniseal" as manufactured by Sonneborn Building Products, Inc., or equal.

B. Interior caulking shall be one the following: "Sonalac" as manufactured by Sonneborn Building Products, Inc., "Acrylic Latex" as manufactured by Gibson-Homans Company, "AC-20" as manufactured by Pecora Chemical Corporation, or equal.

C. Equivalent products by other manufacturers which meet the specification requirements will be considered for approval by the Architect upon submittal or substantiating manufacturer's data and specifications.

D. Backer rod shall be either a closed-cell polyethylene or an open-cell polyurethane rod as recommended by sealant manufacturer.

E. Rope yarn as required shall be special untreated oakum caulking yarn free from any elements which will produce stains, glass fiber rope or extruded urethane foam.

F. All primers shall be the type and make of the same manufacture of the caulking compound or as recommended by the manufacturer thereof.

G. Caulking colors shall be selected by the Architect from the caulking/sealant manufacturer's full color range.

H. Sample application showing the colors, workmanship and type of finish shall be applied at the job site for the Architect's approval before proceeding.

PART 3 EXECUTION

3.01 WORKMANSHIP:

A. Prior to the start of caulking, all surfaces to be caulked shall be properly raked out to a depth of 1/2 inch and cleaned and primed. Caulking shall then be applied in such manner and depth as indicated, specified or recommended by the manufacturer. All mixing, handling and application methods and equipment shall be in strict accordance with the manufacturer's specifications.

B. Joints deeper than 1/2 inch shall be filled with backing rod to within 1/2 inch of the desired finish of the joint and then sealed as above specified.
C. All caulking beds, beads and joints shall be finished in a uniformly true, straight and smooth harmonious finish in conformity with the above approved samples. Embed all metal thresholds in caulking.

3.02 CLEANING AND PROTECTION:

A. As the work is completed, cleaning, in accordance with the manufacturer’s recommendations, shall be performed, removing all excess material from all adjacent surfaces, leaving no stains or objectionable blemishes. During the application processes, the work of all other trades shall be completely protected from damage, including any necessary or required masking, covering, etc.

END OF SECTION 07550
RENOVATIONS FOR
FAIRGROVE LIFE HOUSES
CITY OF HICKORY

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SECTION 07650---THERMAL AND SOUND INSULATION:

PART 1  GENERAL

1.01 RELATED DOCUMENTS:

A. The general provisions of the Contract, including General and Supplementary General Conditions and General Requirements, apply to the work specified in this section.

1.02 SCOPE:

A. The extent of thermal insulation work is shown on the drawings and as specified herein.

B. The work includes, but is not limited to, the following:

   1. Rigid board insulation - under slabs and in walls
   2. Batt insulation
   3. Sound attenuation blankets

1.03 RELATED SECTIONS:

A. Division 7, Section ‘Thermoplastic Membrane Roofing’ for Roof Insulation
B. Division 9, Section ‘Gypsum Drywall’ for Sound Insulation
C. Division 9, Section ‘Acoustical Ceilings’ for Sound Insulation

1.04 QUALITY ASSURANCE:

A. Thermal Conductivity: The thickness shown are for the thermal conductivity (k-value at 75 degrees F.) specified for each material. Provide adjusted thicknesses as directed for the use of material having a different thermal conductivity.

1.05 SUBMITTALS:

A. Manufacturer's Data, Thermal Insulation:

B. For information only, submit 2 copies of manufacturer’s specifications and installation instructions for each type of insulation required. Include data substantiating that the materials comply with specified requirements. Indicate by copy of transmittal form that Installer shall receive copy of manufacturer's instructions.

1.06 PRODUCT HANDLING:

A. Protection from Deterioration: Do not allow insulation materials to become wet or soiled, or covered with ice or snow. Comply with manufacturer’s recommendations for handling, storage and protection during installation. Protect plastic insulation from exposure to sunlight.
B. Fire Hazard: Do not deliver plastic insulating materials to the project site ahead of the time of installation. Protect at all times against ignition. Complete the installation and concealment of plastic materials as rapidly as possible in each area of work.

1.07 JOB CONDITIONS:

A. Examination of Substrate: The Installer must examine the substrate and the conditions under which the insulation work is to be performed, and notify the Contractor in writing of any unsatisfactory conditions. Do not proceed with the insulation work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Do not proceed with the installation of insulation until subsequent work which conceals the insulation is ready to be performed.

PART 2 PRODUCTS

2.01 MATERIALS:

A. Extruded Polystyrene Plastic Board Insulation: Rigid, closed-cell, extruded polystyrene board complying with FS HH-I-524, Type IV, Class B; 40 PSI compressive strength, 1.0 perm-inch maximum vapor transmission; 0.10% maximum water absorption; manufacturer's standard sizes.

B. Integral Skin: Except as otherwise indicated, provide manufacturer's standard type extruded with integral high-density skin, with thermal conductivity (k-value at 75 degrees F.) of 0.20.

C. Products/Manufacturers: Provide one of the following: "Styrofoam SM" (Dow Chemical); UC Industries Foamular 250; Amofoam by Amoco Foam Products Company or equal

D. Sound Attenuation Blankets: Glass or other inorganic fibers and resinous binders formed into semi-rigid 1-1/2" thick blankets. Products/Manufacturers: Provide one of the following: Johns-Manville, Owens-Corning Fiberglas, U.S. Gypsum.

2.02 BATT INSULATION MATERIALS:

A. Batt Insulation: ASTM C 665; preformed glass fiber batt; friction fit, conforming to the following:
   1. Surface Burning Characteristics: Flame spread index of 25 or less; smoke developed index of 450 or less, when tested in accordance with ASTM E 84.
   2. Combustibility: Non-combustible when tested in accordance with ASTM E 136, except for facing, if any.
   3. Provide insulation made without formaldehyde.
   5. Facing: Asphalt treated Kraft paper, one side.
   6. Manufacturers:
      a. Certain Teed Corporation: www.certainteed.com
      b. Johns Manville Corporation: www.jm.com
      c. Owens Corning Corp: www.owenscorning.com
7. Substitutions: In accordance with guidelines stated within the Project Manual.

2.03 LOOSE-FILL INSULATION

A. Cellulosic-Fiber Loose-Fill Insulation: ASTM C 739, chemically treated for flame-resistance, processing, and handling characteristics. OR
B. Glass-Fiber Loose-Fill Insulation: ASTM C 764, Type I for pneumatic application with maximum flame-spread and smoke-developed indexed of 5.

2.04 MISCELLANEOUS MATERIALS:

A. Mechanical Anchors: Type and size shown or, if not shown, as recommended by the insulation manufacturer for the type of application shown, and condition of substrate, and for compliance with insurance requirements.

B. Metal Furring Strips: Dow Temp Guard Insulation Furring, or equal, 1-5/8" wide, ribbed galvanized steel furring strips.

C. Mastic Sealer: Type recommended by insulation manufacturer for bonding edge joints between units and filling voids in the work.

PART 3 EXECUTION

3.01 INSTALLATION:

A. General: Comply with manufacturer's instructions for the particular conditions of installation in each case. If printed instructions are not available or do not apply to the project condition, consult the manufacturer's technical representative for specific recommendations before proceeding with the work.

B. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.

C. Apply a single layer of insulation of the required thickness, unless otherwise shown or required to make up the total thickness.

D. General Building Insulation: Apply insulation units to the substrate by the method indicated, complying with the manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage, to provide permanent placement and support of units.

E. Place loose-fill insulation into spaces indicated, either by pouring or by machine blowing, to comply with ASTM C 1015. Level horizontal applications to uniform thickness as indicated; lightly settle to uniform density, but do not compact excessively.

F. Stuff loose mineral fiber insulation into miscellaneous voids and cavity spaces as indicated. Compact to approximately 40% of normal maximum volume (to a density of approximately 2.5 lbs. per cu. ft.)
G. Cavity Wall Insulation: Press courses of insulation between wall ties and other confining obstructions in the cavity, with edges butted tightly both ways. Press units firmly against previously applied waterproofing on inside wythe of masonry or other construction as shown.

H. Wedge insulation from outside wythe of construction with small fragments of masonry materials spaced 1'-0" o.c. both ways.

I. Sound attenuation blankets: Install sound attenuation blankets in ALL stud walls and above acoustical lay-in ceilings where called for.

END OF SECTION 07650
SECTION 07722 – ROOF AND DECK INSULATION:

PART 1 GENERAL

Division 07 Thermal and Moisture Protection
Section 07 22 00 – Roof and Deck Insulation

PART 1 GENERAL

1.1 SECTION INCLUDES

A. HCFC FREE rigid board type roof insulation(s) for thermal protection as part of roofing assemblies.

B. Roofing crickets.

1.2 RELATED SECTIONS

A. Division 6: Roof blocking and nailers.

1.3 REFERENCES


D. FM 4470 - Approval Standard - Class I Roof Covers.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00 and 01 60 00.

B. Product Data:

1. Manufacturer’s specifications.

2. Installation instructions for insulation board and fasteners.

3. Product Data as per ASTM 2129 – 01 Standard for Data Collection for Sustainability Assessment of Building Products.

C. Samples:

1. Submit 6 by 6 inch (152 by 152 mm) samples of each board type required.

D. Shop Drawings: Roof plan showing layout of boards and fastening patterns.

E. Certificates: System Manufacturer’s or insulation manufacturer’s certification that the insulation meets Zero ODP (Ozone Depletion Potential) and Zero GWP (Global Warming Potential) specification requirements.

F. Thermal Warranty: Submit sample warranty indicating conditions and limitations.
1.6 QUALITY ASSURANCE

A. Regulatory Requirements:
   2. Factory Mutual (FM).
   3. Underwriters Laboratories Inc. (UL) Classification.

1.7 DELIVERY, STORAGE AND HANDLING

A. Comply with general requirements specified in Section 01 65 00.
B. Deliver insulation in packages labeled with material name, thermal value and product code.
C. When stored outdoors, stack insulation on pallets above ground or roof deck and cover with tarpaulin or other suitable waterproof coverings. Slit or remove manufacturer’s packaging before covering with waterproof covering.

1.8 PROJECT CONDITIONS

A. Comply with insurance underwriter’s requirements applicable for products of this Section.
B. Do not install insulation on roof deck when water of any type is present. Do not apply roofing materials when substrate is damp or wet.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Atlas Roofing Corporation or approved others.
B. Provide polyiso roof board insulation from a single manufacturer.

2.2 MATERIALS

A. Polyiso Roof Board Insulation: Provide products that comply with the following:
   1. ASTM standards specified.
   2. Factory Mutual (FM) approvals specified.
   3. Underwriters Laboratories Inc. (UL) classifications specified.
B. Foam Nail Base: Closed-cell HCFC FREE “Green” polyisocyanurate foam board manufactured using HCFC blowing agent and bonded to 7/16 inch thick APA/TECO rated OSB on the top side and a fiber-reinforced felt facer on the bottom; for use with fiberglass shingles FM 1-90 wind rating; compressive strength - 20 psi.
   1. ASTM C 1289, Type V
2. **APA/TECO rated OSB nailable surface**

C. LTTR - Insulation "R" Value: R30 Long-term thermal resistance values of the foam were determined in accordance with CAN/ULC-S770. All test samples were third-party selected and tested by an accredited materials testing laboratory.

D. Related Materials:

   1. Fasteners: Factory Mutual approved.
   2. Base Ply: As recommended by membrane manufacturer.
   4. Asphalt Bitumen: Comply with ASTM D 312, Type III (steep) or Type IV. USE ONLY ON APPROVED BOARD INSULATION TYPES. Provide with labels indicating flash point, softening point, finished blowing temperature, and equiviscous temperature.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean and free of foreign material that will damage insulation or impede installation.

B. Verify that roof drains, scuppers, roof curbs, nailers, equipment supports, vents and other roof accessories are secured properly and installed in conformance with Contract Drawings and submittals.

C. Verify that deck is structurally sound to support installers, materials and equipment without damaging or deforming work. Start of installation indicates installer accepts conditions of existing deck surfaces.

3.2 APPLICATION / INSTALLATION

A. Install specified insulation using approved [mechanical fasteners] [hot asphalt] [adhesives] in accordance with manufacturer’s latest written instructions and as required by governing codes and Owner’s insurance carrier.

B. Install with end joints staggered to avoid having insulation joints coinciding with joints in deck. In multi-layer installations, stagger joints in top and bottom layers.

3.3 CLEANING / PROTECTION

A. Remove trash and construction debris from insulation surface prior to application of roofing membrane.

B. Do not leave installed insulation exposed to weather. Cover and waterproof with completed roof system immediately after installation.

   1. Temporarily seal exposed insulation edges at the end of each day.
2. Remove and replace installed insulation that has become wet or damaged with new insulation.

C. Protect installed insulation and roof cover from traffic by use of protective covering materials during and after installation.

END OF SECTION 07722
SECTION 08200---FLUSH WOOD DOORS:

PART 1   GENERAL

1.01 RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary General Conditions and General Requirements apply to the work specified in this section.

1.02 SCOPE:

The extent and location of each type of wood door is shown on the drawings and in schedules.

The types of doors required include the following:

   Solid core flush wood doors with veneer faces.

Louvers for wood doors are specified under Division 5, Section ‘Miscellaneous Metals’. Installation is specified in this section.

1.03 QUALITY ASSURANCE:

General: Comply with the requirements of the following standards unless otherwise indicated.


   Factory mark each door with the NWMA "Quality Certified" Seal of Approval for conformance with NWMA I. S. I.

Fire-Rated Wood Doors: Where fire-resistance classifications are shown or scheduled for wood door assemblies, provide doors which comply with the requirements of NFPA No. 80 "Standard for Fire Doors and Windows" and which have been tested and rated with single point hardware by UL.

   Provide UL label on each door and panel.

Manufacturers: Provide wood doors as manufactured by one of the following:

   Algoma
   Eggers
   Weyerhaeuser
   IPIK
   or Architect approved equal
1.04 SUBMITTALS:

Manufacturer's Data:

For information only, submit 2 copies of door manufacturer's specifications and installation instructions for each type of wood door required, including other data as may be required to show compliance with the specified requirements. Indicate by transmittal form that copy of each instruction has been transmitted to the Installer.

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

Include certifications as may be required to show compliance with the specifications.

Samples:

Samples will be reviewed for color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor. Submit samples for the following:

Transparent Finished Doors: Submit veneer sheet from each available flitch to be used for Premium grade face veneers. Also submit 3 strips of solid wood 3" x 1'-0" of species to be used for exposed edges, trim and other solid wood components.

Guarantees:

Submit 2 copies of written agreement in door manufacturer's standard form signed by the Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or which show telegraphing of construction below in face veneers, as defined in NWMA Standard Door Guarantee, except the NWMA provision for refunding the price received by the door manufacturer for any defective door shall not apply. The guarantee shall also include refinishing and reinstallation which may be required due to repair or replacement of defective doors. Guarantee shall be in effect during the following period of time after the date of acceptance.

For Solid Core Flush Interior Doors: Life of installation.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING:

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

PART 2 PRODUCTS

2.01 MATERIALS AND COMPONENTS:

General: Provide wood doors complying with the applicable requirements of NWMA I.S.I. for the kinds and types of doors indicated and as further specified.
Construction: Manufacturer’s standard 5-ply particle core (mineral core for rated doors) construction.

Exposed Surfaces: Provide the kind as further specified. Provide same exposed surface material on both faces of each door and both jamb edges, unless otherwise indicated.

Fire-Rated Doors: Provide exposed faces and both jamb edges to match non-fire-rated doors in the same area of the building, unless otherwise shown or scheduled. Provide trim for openings (if any) which have been tested and listed for the kind of door and rating indicated.

2.02 GENERAL FABRICATION REQUIREMENTS:

Transom and Side Panels: Wherever transom panels or side panels of wood are shown in the same framing systems as wood doors, provide panels which match quality and appearance of associated wood doors in all respects, unless otherwise shown.

Fabricate matching panels with same construction, exposed surfaces and finish as specified for associated doors.

Openings: Cut and trim openings through doors and panels as shown. Comply with the applicable requirements of the referenced standards for the kinds of doors required.

Light Openings: Factory cut openings. Trim openings for non-fire-rated doors with solid wood trim flush with each face of door to match door. Trim openings of fire rated doors with approved metal trim.

Metal Louvers: Factory cut openings.

2.03 SOLID CORE WOOD DOORS:

Solid Core Doors for Transparent Finish: Comply with the following requirements.

Faces: Match existing, Grade A book and running match veneer.
Double doors shall be pair matched.

AWI Grade: Custom.

Finish: Finish to be applied in the field to match existing.

PART 3 EXECUTION

3.01 INSPECTION:

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

Install fire-rated doors in corresponding fire-rated frames in accordance with the requirements of NFPA No. 80.

3.02 INSTALLATION:

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

Hardware: Install all hardware as specified in Finish Hardware Section of these specifications.

Metal Louvers: None required.

Manufacturer’s Instructions: Install wood doors in accordance with manufacturer’s instructions and as shown.

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

Bevel non-fire rated doors 1/8” in 2” at lock and hinge edges. Bevel fire rated doors 1/16” in 2” at lock edge.

Clearances: For non-fire doors provide clearances of: 1/8” at jambs and heads; 1/8” at meeting stiles for pairs of doors; and 1/8” minimum - 1/4 maximum from bottom of door to top of decorative floor finish or covering, except where threshold is shown or scheduled provide 1/4” clearance from bottom of door to top of threshold.

For fire-rated doors, provide clearances complying with the limitations of the authority having jurisdiction.

Job-Site Finished Doors: See Painting section of these specifications for requirements for finishing wood doors.

3.03 ADJUST AND CLEAN:

Operation: Rehang or replace doors which do not swing or operate freely, as directed by the Architect.

Factory Prefinished Doors: Any damage to door or door finish shall be repaired or replaced as directed by Architect.

Job Finished Doors: Refinish or replace doors damaged during installation, as directed by the Architect.

Protection of Completed Work: Installer shall advise Contractor of proper procedures required for protection of installed wood doors from damage or deterioration until acceptance of the work.

END OF SECTION 08200
SECTION 08700—FINISH HARDWARE:

PART 1   GENERAL

1.01  RELATED DOCUMENTS:

Drawings and general provision of contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02  SCOPE:

This section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

Hardware for the following items shall be furnished under other divisions:

- Toilet partitions
- Window hardware
- Cabinet hardware
- Hardware furnished by door manufacturer as part of door assembly
- Aluminum doors

1.03  SUBMITTALS:

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

Product Data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:

- Types, style, function, size, and finish of each hardware item.
- Name and manufacturer of each item.
- Fastenings and other pertinent information.
- Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
- Explanation of all abbreviations, symbols, and codes contained in schedule.
Mounting locations for hardware.

Door and frame sizes and materials.

Submittal Sequence: Submit initial draft of final schedule along with essential product data in order to facilitate the fabrication of other work that is critical in the project construction schedule. Submit final schedule after samples, product data, coordination with shop drawings of other work, delivery schedules, and similar information has been completed and accepted.

Hardware Samples: Not required.

Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner’s final instructions on keying of locks has been fulfilled.

The Finished Hardware Supplier shall provide to the manufacturer templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions be made for locating and installing door hardware to comply with indicated requirements.

1.04 INSPECTION OF THE WORK:

The hardware contractor shall examine all details and shall furnish all hardware to suit. He shall obtain all information required as to details, sizes, shapes and bevel, thickness, etc. of doors and all other items requiring hardware from various trades or from the Architect and shall make all hardware suitable and of perfect fit for each particular case using special design where necessary to accomplish this.

The hardware supplier shall notify the Architect, prior to bidding, of any observed code compliance conflicts.

1.05 QUALITY ASSURANCE:

Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer. Reference Volume 1C Accessibility Code.

Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project’s vicinity, that has a record of successful in-service performance for supplying door hardware similar in quality, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the work, for consultation.

Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.

Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Warnock, Hersey, FM, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.
1.06 PRODUCT HANDLING:

Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.

Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.

Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

Deliver individually packaged door hardware items promptly to place of installation.

Provide secure lock-up for door hardware delivered to the project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the work will not be delayed by hardware losses both before and after installation.

1.07 MAINTENANCE:

Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 PRODUCTS

2.01 MANUFACTURERS:

Available Manufacturers and Product Designation: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified for each hardware type, the comparable product of one of the other manufacturers that complies with requirements. All locks shall be compatible with the Owner’s present keying system.

Subject to requirements, other manufacturers whose products are acceptable for this project include, but are not limited to, the following:

- Hinges ------------------------------- Hager, McKinney
- Locks ------------------------------- Sargent, Corbin
- Exit Devices ------------------------- Von Duprin, Dorma
- O.H. Stops --------------------------- Glynn Johnson
- Door Silencers ----------------------- Glynn Johnson
- Closers ------------------------------ Dorma, CR Laurence Co., Inc.
- Miscellaneous ----------------------- Baldwin
- Threshold and Weatherstripping ------ National Guard

2.02 MATERIALS:
Hinges: Stanley. All exterior doors shall have three (3) hinges per leaf - FBB 199 - 5" x 4-1/2" with non-removable pins. All interior doors shall have a minimum three (3) hinges per leaf – FBB – 4-1/2" x 4-1/2". Provide four (4) hinges for any door leaf that exceeds 7'-2" high. Provide 5” x 4-1/2” hinges for any door leaf that exceeds 3'-0” width. Use nonferrous heavy duty ball bearing hinges for all exterior doors. Use heavy duty ball bearing hinges for toilet doors. Use medium duty ball bearing hinges for all interior office doors. Use light duty ball bearing hinges for all interior non office doors. All exterior door hinges shall be manufactured completely of non-ferrous metal and have non-removable pins. Provide NRP's on interior doors which open into corridors. All hinges to be button-type.

Locks: All locksets shall be Schlage “L” Series heavy duty mortise locks and “AL” Series standard duty cylindrical locks, meeting or exceeding ANSI 156.13 Series 1000 Grade 1. Design shall be L WIL Style meeting ADA requirements. Locks shall be 6 pin tumbler. Function of locks shall be as scheduled on the drawings.

Closers: All closers to be equal and similar to LCN closers as listed below. Provide appropriate label for rated assemblies. Closers shall comply with ADA requirements. Non-electrically operated closers shall be furnished with "back-check" option. Furnish closers allowing maximum door swings according to plan locations. Provide all parts and accessories required for proper installation.

Closers shall be typically be mounted on room side (not on corridor side) of door opening. Where opening occurs between room, typically mount closer on smaller room side.

   Type A: LCN 4040 Super Smoothee Series with stop where schedule does not require a wall, floor or overhead stop.

Exit Devices: Sargent 80 Series with appropriate head, stile and jamb strikes and other miscellaneous fittings required for proper installation. Where vertical rods extend into floor or thresholds, furnish dustproof strikes. Closer types as follows:

   A: 8800 Rim type for wood doors
   B: MD 8600 Concealed vertical rod for aluminum and metal doors

   Furnish with cylinder dogging. Trim to be ET design to meet ADA requirements.

Push/Pulls: Ives 8300/8200

Recessed Door Pulls: Elmes T203

Recessed Door Track: Provide as per door manufacturer’s recommendation.

Door Stops: Overhead stops and holders by Sargent, 590 surface mounted, or approved equal. Wall stops to be used wherever possible Ives #408 or #407-26D. Floor stops to be used where wall stops cannot be used, Ives #436 or #438-26D.

Silencers: Glynn-Johnson, or equal, 3 per single door, 4 per pair doors.

Flush Bolts: Ives #457-1/2, Baldwin, Builders Brass - ASA size - 26D.

Thresholds and Weatherstripping by Pemko:
Saddle Threshold: 151 - 3"
Thresholds: 2005 with Silicone Seal (at exterior doors)
Weatherstripping: Single leaf; 305CR (bronze) for jambs and head; 315CN for door bottom
Astragal: 355
Rain Drips: 345A mounted to door frame above unprotected out-swinging exterior doors.

2.03 KEYING:

All new locks shall be factory masterkeyed and grand masterkeyed as later directed by Architect and Owner. All locks shall also be construction masterkeyed. Furnish eight construction master keys and six building master keys.

Provide 4 change keys for each change with key code stamped on bow of cylinder and cylinder face.

Send all masterkeys, grand masterkeys and all change keys direct to the Owner from manufacturer by registered mail, return receipt requested.

2.04 FINISH:

Finish for all exposed metal hardware items shall be similar and equal to Builders Hardware Manufacturers' Association 630 Satin stainless steel. Items of hardware which are not metal, shall match this color as close as possible by selecting from the manufacturer's full available color range.

Special Finishes: Where indicated on the drawings or elsewhere within the specification, furnish knurled knobs suitable for identification by the visually impaired.

2.05 KEY CONTROL CABINET: Provide a steel, lockable key cabinet suitable for the number of keys required for this project.

PART 3 EXECUTION

3.01 INSTALLATION:

Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.

"Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.

NWWDA Industry Standard I.S.1.7., "Hardware Locations for Wood Flush Doors."

Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing works specified in the Division 9 sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

Set thresholds for exterior doors in full bed of butyl-rubber of polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."

Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirement are not otherwise indicated.

3.02 ADJUSTING, CLEANING, AND DEMONSTRATING:

Adjust and check each operating item of hardware on each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.

Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment to all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

Clean adjacent surfaces soiled by hardware installation.

Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.

Six-Month Adjustment: Approximately six months after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latchsets and locksets and of door control devices, and of other major hardware suppliers, shall return to the project to perform the following work:

Examine and readjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.

Consult with and instruct Owner's personnel in recommended addition to the maintenance procedures.

Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.

Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.03 HARDWARE SCHEDULE: See drawings.

END OF SECTION 08700
SECTION 08800---GLASS AND GLAZING:

PART 1  GENERAL

1.01  RELATED DOCUMENTS:

   A. The general provisions of the Contract, including General and Supplementary General Conditions and General Requirements, apply to the work specified in this section.

1.02  DESCRIPTION OF WORK:

   A. The extent of glass and glazing work is shown on the drawings.

   B. The required applications of glass and glazing include (but are not necessarily limited to) the following:

      1. Glazing exterior doors and frames.
      2. Glazing interior doors and frames.
      3. Glazing interior partitions, and miscellaneous interior glazing.

1.03  RELATED SECTIONS:

   A. Division 8, Section “Wood Windows” for glass furnished by window manufacturer.

1.04  QUALITY ASSURANCE:

   A. Safety Glass: Comply with ANSI Z97.1, with label on each piece.

   B. Fire-Resistance Glass: Tested and listed by UL for "fire resistance".

   C. Manufacturer of Glass: One of the following:

      1. AFG Industries, Inc.
      2. Ford Motor Co. - Glass Division
      3. PPG Industries, Inc.
      4. or approved equal.

   D. All glass shall be American made.

1.05  SUBMITTALS:

   A. Manufacturer's Data, Glass: For information only, submit two (2) copies of manufacturer’s specifications and installation instructions for each type of glass required. Include test data substantiating that glass complies with specified requirements. Indicate by copy of transmittal that Glazier has received copy of handling and glazing instructions.
B. Manufacturer's Data, Glazing Materials: For information only, submit two (2) copies of manufacturer's specifications, and installation instructions for each type of glazing sealant and compound, gasket and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown. Show by transmittal that one copy of each recommendation and instruction has been distributed to the Glazier.

C. Samples, Glass: Not required.

1.06 JOB CONDITIONS:

A. The Glazier must examine the framing and glazing channel surfaces, backing, removable stop design, and the conditions under which the glazing is to be performed, and notify the Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the glazing until unsatisfactory conditions have been corrected in a manner acceptable to the Glazier.

B. Weather Conditions: Do not proceed with installation of liquid sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation.

PART 2 PRODUCTS

2.01 GLASS:

A. Clear Float Glass: Polished float glass; FS DD-G-451, Type I, Class I, Quality q3; 1/4" thick, except as otherwise indicated.

B. Tempered Glass: Glass (FS DD-G-451, Type I), which has been heat-strengthened by manufacturer's standard process (after cutting to final size), to achieve a flexural strength of four times normal glass strength; clear (Class 1), except as otherwise indicated.

1. Provide 1/4" thick glass, except as otherwise indicated.

2. NOTE: Use tempered glass at all openings where 1/4" glazing is indicated unless opening is designated to receive wire glass.

C. 1" Insulating Glass (Clear Tempered): Manufacturer's standard units of 2 sheets of 1/4" thick float glass as above specified; permanently and hermetically sealed together at edges with spacers and sealant; to provide a dehydrated air space 1/2" thick with -60 degrees F. dew point; fabricated to sizes and shapes indicated. Use clear float glass on exterior and clear float glass on interior, both sheets tempered. Furnish manufacturer's 10-year warranty in two (2) copies to Architect.

2.02 GLAZING SEALANTS/COMPOUNDS:

A. General: Provide exposed glazing materials in color as selected by Architect from manufacturer's standard colors. Provide hardness of materials as recommended by the manufacturer for the required application
and condition of installation in each case. Provide only compounds which are known (proven) to be fully compatible with surfaces contacted.

B. Silicone Rubber Glazing Sealant: Silicone rubber, one-part elastomeric sealant, complying with FS TT-S-001543, Class A. Provide acid type for non-porous channel surfaces, and provide non-acid type for porous channel surfaces (where any of the channel surfaces are porous). Use for all exterior stop bead glazing.

C. Acrylic-Latex Glazing Sealant: Modified latex rubber and acrylic emulsion-polymer, compounded specifically as a glazing sealant with permanent flexibility (non-hardening), non-staining and non-bleeding. Use for all interior stop bead glazing.

2.03 GLAZING GASKETS:

A. Polyvinyl Chloride Glazing Gaskets: Extruded, flexible PVC gaskets of the profile and hardness shown, or as required for watertight construction; comply with ASTM D 2287.

2.04 MISCELLANEOUS GLAZING MATERIALS:

A. Setting Blocks: Neoprene, 70-90 durometer hardness, with proven compatibility with sealants used.

B. Spacers: Neoprene, 40-50 durometer hardness, with proven compatibility with sealants used.

C. Compressible Filler Rods: Closed cell or waterproofed jacketed rod stock of synthetic rubber of plastic foam, flexible and resilient, with 5-10 psi compression strength for 25% deflection.

D. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

PART 3 EXECUTION

3.01 STANDARDS AND PERFORMANCE:

A. Watertight and airtight installation of each piece of glass is required, except as otherwise shown. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors) without failure of any kind including loss or breakage of glass, failure of sealants or gaskets to remain water-tight and airtight, deterioration of glazing materials and other defects in the work.

B. Protect glass from edge damage at all times during handling, installation and operation of the building.

C. Glazing channel dimensions as shown are intended to provide for necessary minimum bite on the glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerances. The Glazier is responsible for correct glass size for each opening, within the tolerances and necessary dimensions established.

D. Comply with combined recommendations of glass manufacturer and manufacturer of sealants and other
materials used in glazing except where more stringent requirements are shown or specified, and except where manufacturer's technical representatives direct otherwise.

E. Comply with "Glazing Manual" by Flat Glass Marketing Association except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.

F. Inspect each piece of glass immediately before installation, and eliminate any which have observable edge damage or face imperfections.

G. Unify appearance of each series of lights by setting each piece to match others as nearly as possible. Inspect each piece and set with pattern, drawn and bow oriented in the same direction as other pieces.

3.02 PREPARATION FOR GLAZING:

A. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the substrate.

B. Remove lacquer from metal surfaces wherever elastomeric sealants are used.

C. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer.

3.03 GLAZING:

A. Install setting blocks of proper size at quarter points of sill rabbet. Set blocks in thin course of the heel-bead compound, if any.

B. Provide spacers inside and out, and of proper size and spacing, for all glass sizes larger than 50 united inches, except where gaskets are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

C. Voids and Filler Rods: Prevent exudation of sealant or compound by forming voids or installing filler rods in the channel at the heel of jambs and head (do not leave voids in the sill channels) except as otherwise indicated, depending on light size, thickness and type of glass, and complying with manufacturer's recommendations.

D. Do not attempt to cut, seam, nip or abrade glass which is tempered, heat strengthened, or coated.

E. Force sealants into channel to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

F. Tool exposed surfaces of glazing liquids and compounds to provide a substantial "wash" away from the glass. Install pressurized tapes and gaskets to protrude slightly out of the channel, so as to eliminate dirt and moisture pockets.
G. Clean and trim excess glazing materials from the glass and stops of frame promptly after installation, and eliminate stains and discolorations.

H. Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when subjected to dynamic movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel bead.

I. Gasket Glazing: Miter cut and bond ends together at corners where gaskets are used for channel glazing, so that gaskets will not pull away from corners and result in voids or leaks in the glazing system.

3.04 CURE, PROTECTION AND CLEANING:

A. Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

B. Protect exterior glass from breakage immediately upon installation, by attachment of crossed streamers to framing held away from glass. Do not apply markers of any type to surfaces of glass.

C. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during the construction period, including natural causes, accidents and vandalism.

D. Maintain glass in a reasonably clean condition during construction, so that it will not be damaged by corrosive action and will not contribute (by wash-off) to the deterioration of glazing materials and other work.

E. Wash and polish glass on both faces not more than four days prior to Owner's acceptance of the work in each area. Comply with glass manufacturer's recommendations.

END OF SECTION 08800
SECTION 09260---GYPSUM DRYWALL:

PART 1   GENERAL

1.01  RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary General Conditions and General Requirements apply to the work specified in this section.

1.02  DESCRIPTION OF WORK:

The extent of the gypsum drywall work is shown on the drawings and in schedules and is hereby defined to include gypsum board work with a tape-and-compound joint treatment system known as "drywall finishing" work.

The types of work required include the following:

- Gypsum drywall including screw-type wood and metal support system.
- Drywall finishing (joint tape-and-compound treatment).
- Interior gypsum drywall ceiling/soffits.

1.03 RELATED SECTIONS

Division 5, Section Light gauge Metal Framing
Division 9, Section Ceramic Tile

1.04 QUALITY ASSURANCE:

Fire-Resistance Rating: Where work is indicated for fire-resistance ratings, including those required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities, including UL and ASTM.

Industry Standard: Comply with applicable requirements of GA-216 "Application and Finishing of Gypsum Board" by the Gypsum Association, except where more detailed or more stringent requirements are indicated including the recommendations of the manufacturer.

Allowable Tolerances: 1/8 inch offsets between planes of board faces, and 1/4 inch in 8 feet -0 inch for plumb, level, warp and bow.


1.05 SUBMITTALS:

Manufacturer's Data, Gypsum Drywall: For information only, submit two copies of manufacturer's product
specifications and installation instructions for each gypsum drywall component, including other data as may be required to show compliance with these specifications. Distribute an additional copy of each installation instruction to the Installer.

1.06 PRODUCT HANDLING:

Deliver gypsum drywall materials in sealed containers and bundles, fully identified with manufacturer's name, brand, type and grade; store in a dry, well ventilated space, protected from the weather, under cover and off the ground.

1.07 JOB CONDITIONS:

Installer must examine the substrates and the spaces to receive gypsum drywall, and the conditions under which gypsum drywall is to be installed; and shall notify the Contractor, in writing, of conditions detrimental to the proper and timely completion of the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

For interior work, maintain ambient temperatures at not less than 55 degrees F., for the period of 24 hours before drywall finishing, during installation and until compounds are dry.

PART 2 PRODUCTS

2.01 METAL SUPPORT MATERIALS:

General: To the extent not otherwise indicated, comply with Gypsum Association Specification GA-203 "Installation of Screw-Type Steel Framing Members to Receive Gypsum-board" (as specified and recommended) for metal system supporting gypsum drywall work.

Ceiling and Soffit Suspension Main Runners: 1-1/2 inch steel channels, 0.500 lb. per ft., cold-rolled.

   Hanger Wire: ASTM A 641, soft, Class 1 galvanized, pre-stretched; sized in accordance with GA-203.

   Hanger Anchorage Devices: Size for 3 x calculated loads, except size direct-pull concrete inserts for 5 x calculated loads.

Studs (Non-Loadbearing Interior Walls): ASTM C 645; 20 gauge x 3-5/8 inch deep, except as otherwise indicated.

   Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.

   Stud System Accessories: Provide stud manufacturer's standard clips, shoes, ties, reinforcements, fasteners and other accessories as needed for a complete stud system.

Furring Members: ASTM C 645; 25 gauge, hat-shaped.
Fasteners: Type and size recommended by furring manufacturer for the substrate and application indicated.

2.02 GYPSUM BOARD PRODUCTS:

General: To the extent not otherwise indicated, comply with GA-216, as specified and recommended.

Interior Exposed Gypsum Board:

- Edge Profile: Special rounded or beveled edge.
- Sheet Size: Maximum length available which will minimize end joints.
- Thickness: 5/8 inch, except where otherwise indicated.

Interior Exposed Gypsum Board – Mold Resistant and Mildew Resistant:

- Edge Profile: Special rounded or beveled edge.
- Sheet Size: Maximum length available which will minimize end joints.
- Thickness: 5/8 inch, except where otherwise indicated.

Gypsum Sheathing Board: Equal and similar to Georgia-Pacific Corp, Dens-Glass Gold.

- Edge Profile: Square edge.
- Thickness: 5/8 inch except as otherwise indicated.

Interior Cement Board: Equal and similar to Georgia-Pacific Corp, Dens-Glass Gold.

- Edge Profile: Rounded.
- Sheet Size: 4 feet wide x maximum length available.
- Thickness: 5/8

2.03 TRIM ACCESSORIES:

General: Manufacturer’s standard galvanized steel beaded units with flanges for concealment in joint com-pound, including corner beads, edge trim and control joints; except provide semi-finishing type (flange not concealed) where indicated.

2.04 JOINT TREATMENT MATERIALS:

General: ASTM C 475; type recommended by the manufacturer for the application indicated, except as otherwise
Joint Tape: Interior perforated paper tape. Exterior 2 inches wide, min. 10 x 10 glass mesh tape.

Grade: 2 separate grades; one specifically for bedding tapes and filling depressions, and one for topping and sanding.

Joint Compound: On interior work provide chemical-hardening-type for bedding and filling, ready-mixed vinyl-type for topping.

2.05 MISCELLANEOUS MATERIALS:

General: Provide auxiliary materials for gypsum drywall work of the type and grade recommended by the manufacturer of the gypsum board.

Gypsum Board Fasteners: Comply with GA-216. Provide non-corrosive fasteners for all sheathing and exterior soffits.

Concealed Acoustical Sealant: Mastic type; non-shrinking, non-drying, non-migrating and non-staining.

Exposed Acoustical Sealant: Latex, acrylic, or acrylic-latex type, permanently elastic and paintable.

Sound Attenuation Blankets: Semi-rigid mineral fiber blanket without membrane, Class 25 flame spread, 1-1/2 inch thick. Required in all walls and required above ceilings where indicated on drawings.

PART 3 EXECUTION

3.01 INSTALLATION OF METAL SUPPORT SYSTEMS:

General: To the extent not otherwise indicated, comply with GA-203, and manufacturer's instructions.

Space ceiling suspension main runners 4 feet -0 inch o.c. and space hangers 4 feet - 0 inch o.c. along runners.

Isolate stud system from transfer to structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.

Install runner tracks at floors, ceiling and structural walls and columns where gypsum drywall stud system abuts other work.

Extend partition stud system through ceilings to structural support above ceiling, except where indicated to terminate at ceiling.

Space studs 16 inches o.c., except as otherwise indicated.

Door Frames: Install additional jamb studs at door frames as indicated, but not less than 2 studs at each jamb.
Space jack studs over door frames at same spacing as partition studs.

Space ceiling furring members 16 inches o.c., except as otherwise indicated.

Space wall furring members 16 inches o.c., except as otherwise indicated.

Screw furring members to structural support where possible; otherwise wire-tie or clip as recommended by manufacturer.

Install supplementary framing, runners, furring, blocking and bracing at opening and terminations in the work, and at locations required to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly on gypsum board alone.

3.02 GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS:

Pre-Installation Conference: Meet at the project site with the installers of related work and review the coordination and sequencing of work to ensure that everything to be concealed by gypsum drywall has been accomplished, and that chases, access panels, openings, supplementary framing and blocking and similar provisions have been completed.

Install sound attenuation blankets in all partitions, prior to gypsum board unless readily installed after board has been installed.

General Standards: In addition to compliance with GA-216, comply with manufacturer’s instructions and requirements for fire-resistance ratings, whichever is most stringent.

Install wall/partition boards vertically to avoid end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.

Cover both faces of steel studs with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are properly braced internally.

Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4inch to □inch space and trim edge with J-type semi-finishing edge trim. Seal joints with acoustical sealant. Do not fasten drywall directly to stud system runner tracks.

Space fasteners in gypsum boards in accordance with GA-216 and manufacturer’s recommendations, except as otherwise indicated.

Apply acoustical sealant around all electrical outlet box cut-outs.

3.03 SPECIAL GYPSUM BOARD APPLICATIONS:

Single-Layer Ceilings: Install exposed gypsum board prior to wall/partition board installation.
Fasten with screws.

Single-Layer Walls and Partitions: Install exposed gypsum board.

Fasten with screws at top and bottom.

Fasten to wood supports with adhesive and with either temporary or permanent nails or screws.

Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install gypsum backing board.

In toilets and similar "wet" areas, install water-resistant backing board. Apply with uncut long edge at bottom of work. Seal ends, cut-edges and penetrations of each piece with water-resistant sealant before installation.

Double-Layer Walls and Partitions:

Install base layer with screws.

Install exposed gypsum board with adhesive with screws at top and bottom and in center as required to keep board in position until adhesive is set.

Do not align joint in gypsum board on opposite sides of walls.

Install sound batts in walls after one side of gypsum board is in place.

Direct-Bonding to Substrate: Where gypsum board is indicated to be directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum board until fastening adhesive has set.

Fasten with zinc-coated screws, or with zinc-coated nails where supports are nailable.

Exterior Soffits: None required.

3.04 INSTALLATION OF DRYWALL TRIM ACCESSORIES:

General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.

Install metal corner beads at external corners of drywall work.

Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where semi-finishing type is indicated.
Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

Install J-type semi-finishing trim where indicated, and where exterior gypsum board edges are not covered by applied moldings.

Install metal control joint (beaded-type) where indicated.

3.05 INSTALLATION OF DRYWALL FINISHING:

General: Apply treatment at gypsum board joints (both directions) flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Prefill open joints and rounded or beveled edges, using type of compound recommended by manufacturer.

Apply joint tape at joints between gypsum boards, except where a trim accessory is indicated.

Apply joint compound in 3 coats (not including prefill of openings in base), and sand between last 2 coats and after last coat.

Partial Finishing: Omit third coat and sanding on concealed drywall work which is indicated for drywall finishing, including sound, fire, air and smoke-rated work.

Refer to Painting and Wallcovering Sections for decorative finishes to be applied to drywall work.

Acoustical Type Drywall Finishing: Provide primer coat on drywall surface as recommended by the manufacturer. Mix texture finish material per manufacturer’s specifications. Apply to drywall surface with recommended type spray equipment to a uniform texture without starved spots or other indications of thin application.

3.06 PROTECTION OF WORK:

Installer shall advise Contractor of required procedures for protection of the Gypsum drywall work from damage and deterioration during the remainder of the construction period.

3.07 SPECIAL REQUIREMENTS FOR DRYWALL WORK:

All corridor walls, fire walls and smoke walls shall run continuous from floor to bottom of roof deck or slab above and shall be finished on both sides of wall for entire height with thickness of board shown on plans. Portions of walls above ceilings shall be partially finished as above specified. Where walls meet metal deck voids in deck shall be filled with fireproofing material to completely fill voids.

Where drywall fireproofing of structure is shown, fireproofing shall turn up around all duct penetrations to slab or roof deck above to form a complete seal.

At penetrations of ducts or pipes in corridor walls, smoke walls or fire walls, fit gypsum board around penetration as tight as possible and seal remaining crack around penetration.
Where UL design or sound transmission design details are noted for particular areas, comply with all portions of the referenced details for construction.

END OF SECTION 09260
SECTION 09310---TILE WORK:

PART 1 - GENERAL

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

1.2 SUMMARY
A. This Section includes the following:
   1. Porcelain Wall and Paver Tile.
   2. Stone thresholds installed as part of tile installations.
B. Related Sections include the following:
   1. Division 3 Section "Cast-in-Place Concrete" for monolithic slab finishes specified for tile substrates.

1.3 DEFINITIONS
A. Facial Dimension: Nominal tile size as defined in ANSI A137.1.

1.4 PERFORMANCE REQUIREMENTS
A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
   1. Level Surfaces: Minimum 0.6.
   2. Step Treads: Minimum 0.6.
   3. Ramp Surfaces: Minimum 0.8.
B. Load-Bearing Performance: Not applicable.

1.5 SUBMITTALS:
A. Product Data: For each type of tile, mortar, grout, and other products specified.
B. Shop Drawings: Not required.
C. **Tile Samples for Initial Selection**: Manufacturer's color charts consisting of actual tiles or sections of tiles showing the full range of colors, textures, and patterns available for each type and composition of tile indicated. Include Samples of accessories involving color selection.

D. **Grout Samples for Initial Selection**: Manufacturer's color charts consisting of actual sections of grout showing the full range of colors available for each type of grout indicated.

E. **Samples for Verification**: Not required.

1.6 **QUALITY ASSURANCE**

A. **Installer Qualifications**: Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. **Source Limitations for Tile**: Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.

C. **Source Limitations for Setting and Grouting Materials**: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

D. **Source Limitations for Other Products**: Obtain each of the following products specified in this Section from one source and by a single manufacturer for each product:

1. Stone thresholds.
2. Joint sealants.
3. Waterproofing.

E. **Mockups**: Not required.

F. **Pre-installation Conference**: Not required.

1.7 **DELIVERY, STORAGE, AND HANDLING**

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 **PROJECT CONDITIONS**
A. Environmental Limitations: Do not install tile until construction in spaces is completed and ambient temperature and humidity conditions are being maintained to comply with referenced standards and manufacturer's written instructions.

1.9 EXTRA MATERIALS:

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Tile: To establish selection criteria a single manufacture has been listed in Heading 2.3 Tile Products.

B. Other Available Manufacturers: Subject to compliance with requirements, other manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Tile Products:
   b. Florida Tile Industries, Inc.
   c. Crossville Ceramics
   d. Dal-Tile

2. Tile-Setting and -Grouting Materials: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

   c. DAP, Inc.
   d. Custom Building Products
   e. Southern Grouts & Mortars, Inc.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.

   1. Provide tile complying with Standard Grade requirements, unless otherwise indicated.

   2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:

1. Provide Architect's selections from manufacturer's full range of colors, textures, and patterns for products of type indicated.
2. Provide tile trim and accessories that match color and finish of adjoining flat tile.

D. Factory Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, blend tile in the factory and package so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples.

E. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless another mounting method is indicated.

1. Where tile is indicated for installation in swimming pools, on exteriors, in shower stalls or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for these kinds of installations and has a record of successful in-service performance.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type and/or recommended by the manufacturer, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot or manufacturer's standard proprietary liquid coating. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

A. Porcelain 12” x 12” Paver Tile and Wall Tile: Provide flat tile complying with the following requirements:

1. Composition: Colorbody Porcelain
2. Facial Dimensions: 12” by 12”
3. Thickness: 5/16 inch
4. Provide trim cap base and trim type wainscot wall tile as indicated on drawings. Trim tile shall be 12” wide by 3” high with finished bullnose edge.
5. Provide cove trim base within shower stalls and spaces for changing adjacent to shower stalls. Trim tile shall be 12” high x 6” high with finished coved bottom edge.
6. Face: Pattern of design indicated, with square or cushion edges.
7. For latex-portland cement mortared and grouted paver tile, pre-coat with temporary protective coating.
8. Provide one of the following:
   a. Dal-Tile – Salerno 12” x 12”
   b. Crossville - Vista Americana 12” x 12”
   c. American Olean – Shadow Bay 12” x 12”
9. Install 12” x 12” paver tile within floors in Break Room 109 and Male Locker 138.
10. Install 12” x 12” paver tile within floors and wall tile on walls as indicated on drawings in Toilet 119, Male Toilet 139, Female Toilet 130 and Toilet 147.

11. Install 12” x 12” wall tile on walls as indicated on drawings in Toilet 101.

B. Porcelain 18” x 18” Paver Tile: Provide flat tile complying with the following requirements:
   1. Composition: Colorbody Porcelain
   2. Facial Dimensions: 18” by 18”
   3. Thickness: 5/16 inch
   4. Provide bullnose trim cap base. Trim tile shall be 12” wide by 3” or 4” (according to manufacturer) high with finished bullnose edge.
   5. Face: Pattern of design indicated, with square or cushion edges.
   6. For latex-Portland cement mortared and grouted paver tile, pre-coat with temporary protective coating.
   7. Provide one of the following:
      a. Dal-Tile – Salerno 18” x 18”
      b. Crossville - Vista Americana 18” x 18”
      c. American Olean – Shadow Bay 18” x 18”
   8. Install 18” x 18” paver tile in offset pattern within floors of Lobby 100 and Toilet 101.

C. Porcelain 2” x 2” Mosaic Paver Tile: Provide flat tile complying with the following requirements:
   1. Composition: Colorbody Porcelain
   2. Facial Dimensions: 2” by 2”
   3. Thickness: 5/16 inch
   4. See wall tile for coved base.
   5. Face: Pattern of design indicated, with square or cushion edges.
   6. For latex-Portland cement mortared and grouted paver tile, pre-coat with temporary protective coating.
   7. Provide one of the following:
      a. Dal-Tile – Salerno 2” x 2”
      b. Crossville - Shadow Bay 3” x 3”
      c. American Olean – Vista Americana 2” x 2”
   8. Install 2” x 2” mosaic tile within floors of (3) shower stalls, (2) spaces adjacent for changing adjacent to shower stalls and within the (2) 4’-0” square sloping floor around floor drains within toilets as indicated on drawings.

D. For latex-Portland cement mortared and grouted paver Unglazed Glazed Wall Tile: Provide flat tile complying with the following requirements:
   1. See Floor Tile.

E. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with the following requirements:
   1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
   2. Shapes: As follows, selected from manufacturer’s standard shapes:
b. Wainscot Cap for Thin-Set Mortar Installations: Surface bullnose.
c. External Corners for Thin-Set Mortar Installations: Surface bullnose.
d. Internal Corners: Field-butt ed square corners for caulking, except with coved base and cap angle pieces designed to member with stretcher shapes.

F. Accessories Wall Tile:
   1. Provide “Sluter” stainless steel outside corner trim.

2.4 STONE THRESHOLDS

A. General: Provide stone thresholds that are uniform in color and finish, fabricated to sizes and profiles indicated to provide transition between tile surfaces and adjoining finished floor surfaces.

   1. Fabricate thresholds to heights indicated, but not more than 1/2 inch (12.7 mm) above adjoining finished floor surfaces, with transition edges beveled on a slope of no greater than 1:2.

B. Marble Thresholds: Provide marble thresholds complying with ASTM C 503 requirements for exterior use and with a minimum abrasive-hardness value of 10 per ASTM C 241.
   1. Provide white, honed marble complying with the Marble Institute of America's Group A requirements for soundness.

2.5 WATERPROOFING FOR THIN-SET TILE INSTALLATIONS:

A. Provide membrane waterproofing over top of sealed cementitious backer board and behind thin set tile installation for all shower stall wall installations.

2.6 WATERPROOFING FOR THICK-SET FLOOR TILE INSTALLATIONS:

A. Provide PVC membrane shower pan under thick set tile installation for shower installations.

2.7 SETTING MATERIALS - REFER TO TILE SCHEDULE FOR TYPES REQUIRED FROM THE FOLLOWING LIST:

A. Latex-Portland Cement Mortar: ANSI A118.4, composed as follows: Both Pre-Packaged and Mixture are acceptable.

   1. Prepackaged Dry-Mortar Mix: Factory-prepared mixture of portland cement; dry, redispersible, ethylene vinyl acetate additive; and other ingredients to which only water needs to be added at Project site.

      a. For wall applications, provide non-sagging, latex-portland cement mortar complying with ANSI A118.4 for mortar of this type defined in Section F-2.1.2.

   2. Mixture of Dry-Mortar Mix and Latex Additive: Mixture of prepackaged dry-mortar mix and liquid-latex additive complying with the following requirements:

      a. Latex Additive: Styrene butadiene rubber or acrylic resin.
b. For wall applications, provide non-sagging, latex-portland cement mortar complying with ANSI A118.4 for mortar of this type defined in Section F-2.1.2.

2.8 GROUTING MATERIALS - REFER TO TILE SCHEDULE FOR TYPES REQUIRED FROM THE FOLLOWING LIST.

A. Latex-Portland Cement Grout: ANSI A118.6 for materials described in Section H-2.4, composed as follows:

1. Factory-Prepared, Dry-Grout Mixture: Factory-prepared mixture of portland cement; dry, redispersible, ethylene vinyl acetate additive; and other ingredients to produce the following:
   a. Unsanded grout mixture for joints 1/8 inch (3.2 mm) and narrower.
   b. Sanded grout mixture for joints 1/8 inch (3.2 mm) and wider.

2. Mixture of Dry-Grout Mix and Latex Additive: Mixture of factory-prepared, dry-grout mix and latex additive complying with the following requirements:
   a. Unsanded Dry-Grout Mix: Dry-set grout complying with ANSI A118.6 for materials described in Section H-2.3, for joints 1/8 inch (3.2 mm) and narrower.
   b. Sanded Dry-Grout Mix: Commercial portland cement grout complying with ANSI A118.6 for materials described in Section H-2.1, for joints 1/8 inch (3.2 mm) and wider.
   c. Latex Additive: Styrene butadiene rubber or acrylic resin.

2.9 ELASTOMERIC SEALANTS

A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements of Division 7 Section "Joint Sealants."

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

C. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and temperature extremes.

D. Available Products: Subject to compliance with requirements, products which may be incorporated into the Work include, but are not limited to, the following:

1. One-Part, Mildew-Resistant Silicone Sealants:
   a. Dow Corning 786; Dow Corning Corporation.
   b. Sanitary 1700; GE Silicones.
   c. Pecora 898 Sanitary Silicone Sealant; Pecora Corp.
   d. Tremsil 600 White; Tremco, Inc.
2.10 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: White-zinc-alloy terrazzo strips, 1/8 inch (3.2 mm) wide at top edge with integral provision for anchorage to mortar bed or substrate, unless otherwise indicated.

C. Temporary Protective Coating: Provide product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; is compatible with tile, mortar, and grout products; and is easily removable after grouting is completed without damaging grout or tile.
   1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F (49 to 60 deg C) per ASTM D 87.
   2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as a temporary protective coating for tile.

D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

E. Grout Sealers: Product recommended by grout manufacturer to protect grout from staining.

2.11 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

   1. Verify that substrates for setting tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 series of tile installation standards for installations indicated.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust latter in consultation with Architect.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds, and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.

B. Provide concrete substrates for tile floors installed with dry-set or latex-portland cement mortars that comply with flatness tolerances specified in referenced ANSI A108 series of tile installation standards for installations indicated.

1. Use trowelable leveling and patching compounds per tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.

2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, verify that tile has been blended in the factory and packaged so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.


C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated on drawings. Align joints when adjoining tiles on floor, base, walls, and trim are the same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
1. For tile mounted in sheets, make joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished work.

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Expansion Joints: Not required for this project.

H. Grout tile to comply with the requirements of the following tile installation standards:
   1. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts), comply with ANSI A108.10.

I. Where indicated on drawings, install cementitious backer units and treat joints to comply with ANSI A108.11 and manufacturer's written instructions for type of application indicated.

3.4 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Ceramic Tile Floor Installation Schedule, including those referencing TCA installation methods and ANSI A108 series of tile installation standards.

B. Joint Widths: Install tile on floors with the following joint widths:
   1. 2 x 2 Tile: 1/8 inch or as recommended by tile manufacturer and approved by Architect.
   2. 12 x 12 Tile: 1/8 inch.

C. Back Buttering: Not applicable.

D. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile, unless otherwise indicated.

E. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

3.5 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Ceramic Tile Wall Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

B. Joint Widths: Install tile on walls with the following joint widths:
   1. Wall Tile: 1/8 inch (1.6 mm).

C. Back Buttering: Not applicable.

D. Base/Cove:
   1. Coved wall base tile shall be installed “flush” with floor tile. “Thin-lip” installation is not acceptable.
   2. Straight wall base tile shall be installed “square” with floor tile.
3.6 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.
2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
3. Remove temporary protective coating, if used, by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure tile is without damage or deterioration at the time of Substantial Completion.

1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces. After inspection, apply one coat of grout sealer to all floors. Application to be in strict accordance with sealer manufacturer's directions.

3.7 CERAMIC TILE FLOOR INSTALLATION SCHEDULE

A. Ceramic Tile Floor Installation Method One: For depressed slab-on-grade without waterproofing.

1. Installation Method: TCA F112 (cement mortar bed bonded to concrete subfloor).
2. Requirements: Mortar bed thickness to be sloped as shown on drawings.
3. Materials:
   a. Mortar Bed – ANSI A108.1 portland cement mortar
   b. Bond coat – portland cement past on a mortar bed that is still workable, or dry-set mortar or latex-portland cement mortar on a cured bed.
   c. Grout – ANSI A118.6, latex-portland cement
   d. Mortar bed bond coat – portland cement slurry

4. Preparation by Other Trades:
   a. Slab to have settle trowel and fine broom finish with no curing compounds used. (When used, mechanical scarifying is necessary.
   b. Slope, when required, to be in subfloor.
   c. Maximum variation in the slab shall not exceed 1/84" in 10'-o” from the required plane.
5. Installation Specifications:
   a. Tile – ANSI A108.1A, .1B, .1C

3.8 CERAMIC TILE WALL INSTALLATION SCHEDULE

A. Ceramic Tile Wall Installation Method One: For masonry or concrete walls.

1. Installation Method: TCA W202 (thin-set bonded to masonry or concrete).
2. Materials:
   a. Mortar – ANSI A118.4, latex-portland cement
   b. Grout – ANSI A118.6, latex-portland cement

3. Preparation by Other Trades:
   a. Surface must be free of coatings, oil, wax.
   b. Concrete – bush-hammered or heavily sand-blasted.
   c. Maximum variation in the masonry surface shall not exceed 1/8” in 8’-0” from the required plane.

4. Installation Specifications:

END OF SECTION 09310
SECTION 09650 – VINYL PLANK FLOORING

PART 1 GENERAL

1.01 SUMMARY
A. Section includes: Solid Vinyl Plank with Locking System

1.02 REFERENCES
A. ASTM International:
   1. IIC sound Rating / ASTM E492: 56 when tested over 6” concrete with ceiling plenum
   2. Slip Resistance / ASTM D2047: >0.65 (wet/dry)
   3. Static Load Limits / ASTM F970: 1000 PSI
   4. Flexibility / ASTM F137: Passes
   5. Resistance to Heat / ASTM F1514: Passes
   6. Resistance to Light / ASTM F1515: Passes
   7. Resistance to Chemicals / ASTM F925: Passes
   8. Radiant Flux/ ASTM 649: Passes, >0.45 watts/cm squared, NFPA Class I
   9. Smoke Density / ASTM E662: Passes, <450

1.03 SUBMITTALS
A. Product Data: Submit product data, including manufacturer’s specification summary sheet for specified products
B. Shop Drawings: Submit shop drawings showing layout, seaming diagram, finish colors, designs and textures
C. Samples: Submit 6” selection and verification samples for finishes, colors, designs and textures
D. Quality Assurance Submittals: Submit the following:
   1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties
E. Submit the following:
   A. Maintenance Data: Maintenance data for installed products in accordance with Division 1 sections. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance
   B. Warranty: Warranty documents specified herein
   C. Qualification Data
      i. For a qualified resilient flooring Installer specified herein

1.04 QUALITY ASSURANCE
A. Regulatory Requirements:
   i. Fire Performance characteristics: Provide resilient plank and/or tile flooring with the following fire performance characteristics as determined by testing in accordance
with ASTM methods indicated below by a certified testing laboratory or testing and inspecting agency acceptable to authorities having jurisdiction

ii. Critical Radiant Flux Class 1 Rating per ASTM E 648

iii. Smoke Density; Less than 450 per ASTM E 662

B. Single Source Responsibility: Obtain vinyl floor covering and adhesive from a single supplier

C. Acceptable Products:
   i. Basis of Design: Shaw Hard Surface, Uncommon Ground 0187V
   ii. Other Manufacturers Considered: Patcraft, Mohawk or approved equal.

D. Manufacturer Qualifications:
   i. ISO 9001 Certified
   ii. ISO 14001 Certified
   iii. OHSAS 18001 Certified
   iv. At least ten years’ active experience in the manufacture and marketing of commercial flooring

E. Installer Qualifications:
   i. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installing work similar to that required for this project
   ii. At least five years’ experience in the installation of resilient flooring
   iii. Experience on at least five projects of similar size, type and complexity of current project
   iv. Employer of tradesmen for current project who are competent in techniques required by manufacturer for resilient flooring installation indicated

F. Pre-Installation Meetings: Conduct pre-installing meeting to confirm project requirements, substrate conditions, manufacturer’s installation instructions and warranty requirements comply with requirements in Division 1

1.05 DELIVERY, STORAGE AND HANDLING

A. General: Comply with requirements in Division 1

B. Ordering: Comply with manufacturer’s ordering and lead-time requirements to avoid construction delays

C. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact

D. Storage and Protection: Material shall be stored in areas that are enclosed and weather tight with the permanent HVAC system set at a temperature of 65-85 degrees Fahrenheit (18°C to 29°C) for a minimum of 48 hours prior to commencement of installation

1.06 PROJECT CONDITIONS
A. Environmental Requirements/Conditions: In accordance with manufacturer’s recommendations, areas to receive floor covering shall be clean, fully enclosed and weather tight with permanent HVAC system set to 65-85 degrees Fahrenheit (18° to 29° Celsius) for 48 hours before installation, during installation and for 48 hours after installation.

B. The temperature of the space shall be kept at a minimum of 50° Fahrenheit (10° Celsius) continually after installation. The floor covering material and adhesive shall be conditioned in the same manner. Existing Conditions: (specify existing conditions affecting product use and installation)

1.07 SEQUENCING AND SCHEDULING

A. Finishing operations: Install floor covering after finishing operations; including painting and ceiling operations have been completed.

B. Concrete curing and drying: Do not install floor covering over concrete substrates until substrates have cured and are dry to bond with adhesive as determined in test methods specified in ASTM F710.

1.08 WARRANTY

A. Manufacturer’s Materials Warranty: Submit, for owner’s acceptance, manufacturer’s standard warranty document.

B. Manufacturer’s warranty is in addition to, and not a limitation of, other rights owner may have under Contract Documents.
   1. Total Warranty Period: 12 year limited warranty commencing on the date of substantial completion.
   2. For materials: 1 year from date of substantial completion including 100% labor costs.
   3. For surface wear 12 years from the date of substantial completion including pro-rated labor costs (see warranty for details).

1.09 MAINTENANCE

A. Extra materials: Deliver to the owner extra materials as the products to be installed. Package products with protective covering or in original cartons and identify with descriptive labels. Comply with Division 1 Closeout Submittals (maintenance materials) Section
   1. Quantity: Furnish quantity of floor covering material equal to 5% of the amount to be installed.

   2. Delivery, Storage and Protection: Comply with the owner’s requirements for delivery, storage and protection of extra materials.
B. Maintenance of finished floor covering shall be according to manufacturers’ maintenance instructions

PART 2 PRODUCTS

2.1 COMMERCIAL RESILIENT/VINYL TILE FLOORING

A. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide Shaw Hard Surface Uncommon Ground 0187V French Grey 02500 High Performance Luxury Vinyl Tile, 4” wide x 36” long, glue down, ExoGuard Finish, Slip Resistance ASTMD2047, Radiant Panel ASTM648, NBS Smoke ASTME662.

B. Other Manufacturers: Subject to compliance with all the requirements of this specification:

1. Patcraft
2. Mohawk
3. Additional Substitution:
   i. All other manufacturers: Submit formal substitution request prior to bid in accordance with Division 01 General Requirements.
   ii. Approval by Architect of other manufacturers does not relieve Contractor of responsibility to provide products which comply with all requirements of this specification

C. Product Description: Solid Vinyl Plank Flooring

   vii. Tile/Plank size: To be selected from manufacturer’s standard sizes.
   viii. Color and Pattern: As selected from manufacturer’s standard colors and patterns.

D. Performance Criteria:
   i. Description: Solid Vinyl Plank
   ii. Dimensional Stability per ASTM F 2199
   iii. Recovery from Long Term Indentation per ASTM F 970 modified – 1,000psi
   iv. Determination of anti-slip properties DIN 51130 – R10
   vi. Chemical resistance per ASTM F 925 – Excellent, results on request
   vii. Flexibility per ASTM F 137 – Pass
   viii. Fire Performance: ASTM E648; Class 1
   ix. Slab Moisture Tolerance
a. When Maximum Relative Humidity (RH) of 85% when tested according to ASTM F2170
b. Maximum moisture vapor emission rate of 6 pounds of water per 1,000 square feet in 24 hours when tested according to ASTM F1869

2.2 RELATED MATERIALS
A. Substrate preparation and testing: Comply with ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
B. Resilient floor covering accessories: Refer to other Division 9 sections for resilient floor covering accessories
C. Expansion joint covers: Refer to other specification section for expansion joint covers to be used with resilient floor covering

PART 3 EXECUTION

3.01 MANUFACTURER’S INSTRUCTIONS
A. Compliance: Comply with manufacturer’s requirements.
B. Adhesive: Comply with manufacturer’s requirements.

3.02 EXAMINATION
A. Site verification of conditions: Confirm substrate conditions are acceptable for product installation in accordance with manufacturer’s instructions
B. Material inspection: In accordance with manufacturer’s installation requirements, visually inspect materials prior to installing and during installation, if visual defect is noticed STOP WORK and contact manufacturer. Material with visual defects should not be installed
C. Permanent HVAC systems are installed and operable
D. Other work, including overhead work, that could cause damage, dirt, dust, debris or otherwise interrupt installation has been completed or suspended

3.03 PREPARATION
A. Acclimate product to the installation site conditions by delivering all materials, including adhesives and maintenance products to the job site at least 48 hours prior to starting installation. Store all products at 65°F to 85°F (18°C to 29°C) for 48 hours prior to installation
B. The space where flooring is to be installed shall be fully enclosed and the permanent HVAC system shall be operational prior to installing flooring. The temperature shall be 65° to 85° Fahrenheit (18° to 29° Celsius) for 48 hours before installation, during installation and for 48 hours after installation. The temperature of the space shall be kept at a minimum of 50° Fahrenheit (10° Celsius) continually after installation
C. Adjacent surface protection: Protect adjacent work areas and finish surfaces from damage while installing
D. Surface preparation, General: Prepare substrate in accordance with manufacturer’s instructions
E. Substrate: Prepare substrate to be free of paint, old adhesive, sealers, coatings, finishes, dirt, film forming curing compounds, or other substances which may affect the adhesion of floor covering to the substrate

F. Use trowelable concrete based leveling and patching compound with the same moisture vapor tolerance as the adhesive to fill depressions, holes, cracks, grooves or other irregularities in the substrate

   i. Concrete substrate: Reference Standard ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

   a. Concrete Moisture Test: Per ASTM F 710 section 5

      Persons or testing agencies with experience in concrete moisture testing shall perform moisture tests on concrete regardless of its age or grade level or history of use, with a minimum of three tests for the first 1,000 square feet and one additional test for each 1,000 square feet or fraction thereof. A diagram of the area showing the location and results of each test shall be dated and submitted to the architect, designer, general contractor and/or end user. If the test results exceed the floorcovering manufacturer’s expressed limits, installing shall not commence until results conform to limits

   b. Concrete pH Test

      Perform pH tests on concrete regardless of its age or grade level or history of use. Readings below 7.0 and above 10.0 can adversely affect resilient flooring or adhesives or both

3.04 INSTALLING

A. Refer to manufacturer’s installation guide for detailed specifications on installing LVT with regard to job site conditions, substrate testing and preparation, installation over expansion joints, adhesive and trowel selection and application, layout and installing, clean up and protection of new floor covering after installing.

B. Finish Floor Covering Designs: As selected by Architect, Designer or Owner

3.06 CLEANING

A. Cleaning: See manufacturer’s maintenance guide

B. Remove temporary coverings and protection of adjacent work areas

C. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer’s instructions prior to owner’s acceptance

D. Remove construction debris from project site and legally dispose of

3.07 PROTECTION

A. Protection: Protect installed product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of substantial completion

B. Keep foot traffic off new floor covering for first 24 hours

C. Keep furniture, fixtures and rolling traffic off for first 48 hours

3.08 INITIAL MAINTENANCE PROCEDURES
RENOVATIONS FOR
FAIRGROVE LIFE HOUSES
CITY OF HICKORY

A. Refer to manufacturer’s cleaning and maintenance guides for correct procedures etc.
B. Wait 5 days after installation is completed and thoroughly clean the floor.
C. Dust mop the floor to ensure all loose dirt and/or grit is removed
D. Mix a of pH neutral solution in a clean container with warm water at the manufacturers recommended dilution rate
E. Mop or scrub the floor with a micro fiber pad. If desired a 3M™ RED Buffer Pad #5100 or equivalent can be used
F. Rinse completely and thoroughly with clean, cool, tap water. Do not flood the floor
G. Repeat rinsing as many times as necessary to remove all traces of soil and cleaning solution
H. Take up rinse water and permit flooring to dry completely

END OF SECTION 09650
SECTION 09653---RESILIENT WALL BASE AND ACCESSORIES

PART 1   GENERAL

1.01  RELATED DOCUMENTS:

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

1.02  SUMMARY:

This section includes the following:

- Resilient wall base.
- Resilient flooring accessories.
- Resilient carpet accessories.

Related Sections include the following:

- Division 9 Section Carpet

1.03  SUBMITTALS:

Product Data: For each type of product specified.

Samples for Initial Selection: Manufacturer’s standard sample sets consisting of sections of units showing the full range of colors and patterns available for each type of product indicated.

Samples for Verification: In manufacturer’s standard sizes, but not less than 12 inches (300 mm) long, of each product color and pattern specified.

1.04  QUALITY ASSURANCE:

Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing resilient products similar to those required for this Project and with a record of successful in-service performance.

Source Limitations: Obtain each type and color of product specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the work.

Fire-Test-Response Characteristics: Provide products with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction.
Critical Radiant Flux: 0.45 W/sq. cm or greater when tested per ASTM E 648.

Smoke Density: Maximum specific optical density of 450 or less when tested per ASTM E 662.

1.05 DELIVERY, STORAGE, AND HANDLING:

Deliver products to project site in manufacturer’s original, unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

Store products in dry spaces protected from weather, with ambient temperatures maintained between 50 and 90 deg F (10 and 32 deg C).

Move products into spaces where they will be installed at least 48 hours before installation, unless longer conditioning period is recommended in writing by manufacturer.

1.06 PROJECT CONDITIONS:

Maintain a temperature of not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C) in spaces to receive resilient products for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer’s written recommendations specify longer time periods. After post-installation period, maintain a temperature of not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

Do not install products until they are at the same temperature as the space where they are to be installed.

For resilient products installed on traffic surfaces, close spaces to traffic during installation and for time period after installation recommended in writing by manufacturer.

Coordinate resilient product installation with other construction to minimize possibility of damage and soiling during remainder of construction period. Install resilient products after other finishing operations, including painting, have been completed.

1.07 EXTRA MATERIALS: Not required for this project.

PART 2 PRODUCTS

2.01 MANUFACTURERS:

Products: Subject to compliance with requirements, provide products equal and similar to those products indicated for each designation in the Resilient Wall Base and Accessory Schedule at the end of Part 3.

Available Manufacturer’s: Subject to compliance with requirements, manufacturer’s whose, products may be incorporated into the work include, but are not limited to, the following:

Mercer Products, Inc.
Johnsonite
Roppe Corporation

2.02 RESILIENT WALL BASE:

Rubber Wall Base: Products complying with FS SS-W-40A, 100% thermoset vulcanized and with requirements specified in the Resilient Wall Base and Accessory Schedule.

2.03 RESILIENT STAIR ACCESSORIES: None required.

2.04 RESILIENT ACCESSORIES:

Rubber Accessories: Products complying with requirements specified in the Resilient Wall Base and Accessory Schedule.

2.05 INSTALLATION ACCESSORIES:

Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by resilient product manufacturer for applications indicated.

Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 EXECUTION

3.01 EXAMINATION:

Examine substrates, areas, and conditions where installation of resilient products will occur, with Installer present, for compliance with manufacturer’s requirements, including those for maximum moisture content. Verify that substrates and conditions are satisfactory for resilient product installation and comply with requirements specified. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION:

General: Comply with manufacturer’s written installation instructions for preparing substrates indicated to receive resilient products.

Use trowelable leveling and patching compounds, according to manufacturers written instructions, to fill cracks, holes, and depressions in substrates.

Use stair-tread-nose filler, according to resilient tread manufacturer’s written instructions, to fill nosing substrates that do not conform to tread contours.
Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

Broom and vacuum clean substrates to be covered immediately before installing resilient products. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.03 INSTALLATION:

General: Install resilient products according to manufacturers written installation instructions.

Apply resilient wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

- Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

- Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

- Do not stretch base during installation.

- On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer’s recommended adhesive filler material.

- Form outside corners on job, from straight pieces of maximum lengths possible, without whitening at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.

- Form inside corners on job, from straight pieces of maximum lengths possible, by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

Place resilient products so they are butted to adjacent materials and bond to substrates with adhesive. Install reducer strips at edges of flooring that would otherwise be exposed.

Apply resilient products to stairs as indicated and according to manufacturers written installation instructions.

3.04 CLEANING AND PROTECTING:

Perform the following operations immediately after installing resilient products:

- Remove adhesive and other surface blemishes using cleaner recommended by resilient product manufacturers.
Sweep or vacuum horizontal surfaces thoroughly.

Do not wash resilient products until after time period recommended by resilient product manufacturer.

Damp-mop or sponge resilient products to remove marks and soil.

Protect resilient products against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by resilient product manufacturer.

Cover resilient products installed on floors and stairs with undyed, untreated building paper until inspection for Substantial Completion.

3.05 RESILIENT WALL BASE AND ACCESSORY SCHEDULE:

Rubber Wall Base: Provide rubber wall base similar and equal to the following:

   Color and Pattern: As selected by Architect from manufacturer’s full range of colors.
   Style: Cove with top-set toe
   Minimum Thickness: 1/8 inch (3.2 mm)
   Height: 6 inches (101.6 mm)
   Lengths: Coils in lengths standard with manufacturer, but not less than 96 feet (29.26m)
   Outside Corners: Job formed
   Inside Corners: Job formed
   Ends: Premolded.
   Surface: Smooth.

Rubber Stair Treads: None required.

Rubber Risers: Not required.

Rubber Stringers: Not required.

Rubber Accessory Molding: Provide rubber accessory molding similar and equal to the following:

   Product Description: Carpet edge for glue-down applications; Carpet nosing; Nosing for rubber tile; Reducer strip for resilient flooring; and, Tile and carpet joiner.
Profile and Dimensions: As indicated on drawings or if not designated, manufacturer’s standard profile for indicated application.

END OF SECTION 09653
SECTION 09900---PAINTING:

PART I   GENERAL

1.01 RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary General Conditions and General Requirements, apply to the work specified in this section.

1.02 DESCRIPTION OF WORK:

A. The extent of painting work is shown on the drawings and schedules, and as herein specified.

B. The work includes painting and finishing of interior and exterior exposed items and surfaces throughout the project, except as herein specified.

   a. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections, except as otherwise specified.

C. The work includes field painting of all bare and covered pipes and ducts, and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under the mechanical and electrical work, except in Mechanical Rooms.

D. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

E. Paint all exposed surfaces whether or not colors are designated in "schedules", except where the natural finish of the material is obviously intended and specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If color or finish is not designated, the Architect will select these from standard colors available for the materials systems as specified.

1.03 PAINTING NOT INCLUDED:

A. The following categories of work are not included as part of the painter-applied finish work, unless otherwise shown or specified.

B. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal, hollow metal work, and similar items. Also, for fabricated components such as architectural woodwork, wood casework, and shop-fabricated or factory-built mechanical and electrical equipment or accessories.

C. Pre-finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) metal toilet enclosures, acoustic materials, architectural woodwork and casework, wood and synthetic athletic flooring products, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets.
D. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, and duct shafts.

E. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, except as otherwise indicated.

F. Operating Parts and Labels: Do not paint any moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts, unless otherwise indicated.

G. Do not paint over any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.04 SUBMITTALS:

A. Manufacturer's Data; Painting: For information only, submit 2 copies of manufacturer's specifications, including paint label analysis and application instructions for each material specified. Indicate by transmittal that a copy of each manufacturer's instructions has been distributed to the Paint Applicator.

B. Samples; Painting: Submit samples for Architect's review of color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor. Provide a listing of the material and application for each coat of each finish sample.

a. On 12" x 12" hardboard, provide 2 samples of each color and material, with texture to simulate actual conditions. Resubmit each sample as requested until required sheen, color and texture is achieved.

b. On actual wood surfaces, provide two 4" x 8" samples of each natural and stained wood finish as required. Label and identify each as to location and application.

c. On concrete masonry, provide two 4" square samples of masonry for each type of finish and color, defining filler, prime and finish coats.

1.05 DELIVERY AND STORAGE:

A. Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label.

B. Provide labels on each container with the following information:

a. Name or title of material.

b. Fed. Spec. number, if applicable.

c. Manufacturer's stock number.

d. Manufacturer's name.

e. Contents by volume, for major pigment and vehicle constituents.

f. Thinning instructions.
g. Application instructions.

1.06 JOB CONDITIONS:

A. Do not apply water-base paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 50 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions. Do not apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 45 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions.

B. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

PART 2 PRODUCTS

2.01 COLORS AND FINISHES:

A. Paint surface treatments and finishes are shown on the drawings and indicated in the Schedule included at the end of this Section.

B. Prior to beginning work the Architect will furnish sample color chips for surfaces to be painted. Match the colors of the chips and submit samples, as specified herein, before proceeding with the work.

C. Proprietary names used to designate colors or materials are not intended to imply that products of the manufacturers are required to the exclusion of equivalent products of other manufacturers.

D. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coating system for various substrates. Upon request from other trades furnish information on characteristics of specified finish materials, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify the Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

2.02 MATERIAL QUALITY:

A. Provide the best quality grade of the various types of coatings as regularly manufactured by approved paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.

Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer, and use only within recommended limits.

Paint materials shall be from one of the following manufacturers or approved equal:

Benjamin Moore Company
Devoe Paint Div., Celanese Coatings Company
ICI DULUX Paints
Minnesota Paint Company
PPG Industries, Inc.
Sherwin-Williams Company

Materials: See "schedule" following this section for material types required.

B. Chemical Components of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions; these requirements do not apply to primers or finishes that are applied in a fabrication or finishing shop:

1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
2. Nonflat Paints and Coatings: VOC content of not more than 150 g/L.
3. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
4. Restricted Components: Paints and coatings shall not contain any of the following:
   a. Acrolein.
   b. Acrylonitrile.
   c. Antimony.
   d. Benzene.
   e. Butyl benzyl phthalate.
   f. Cadmium.
   g. Di (2-ethylhexyl) phthalate.
   h. Di-n-butyl phthalate.
   i. Di-n-octyl phthalate.
   j. 1,2-dichlorobenzene.
   k. Diethyl phthalate.
   l. Dimethyl phthalate.
   m. Ethylbenzene.
   n. Formaldehyde.
   o. Hexavalent chromium.
   p. Isophorone.
   q. Lead.
   r. Mercury.
   s. Methyl ethyl ketone.
   t. Methyl isobutyl ketone.
   u. Methylene chloride.
   v. Naphthalene.
   w. Toluene (methylbenzene).
   x. 1,1,1-trichloroethane.
   y. Vinyl chloride.

PART 3 EXECUTION:

3.01 INSPECTION:
A. Applicator must examine the areas and conditions under which painting work is to be applied. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator.

B. Starting of painting work will be construed as the Applicator's acceptance of the surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

3.02 SURFACE PREPARATION:

A. General: Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.

B. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces.

C. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.

D. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.

E. Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block, and cement plaster to be painted by removing all efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.

F. Determine the alkalinity and moisture content of the surfaces to be painted by performing appropriate tests. If the surfaces are found to be sufficiently alkaline to cause blistering and burning of the finish paint, correct this condition before application of paint. Do not paint over surfaces where the moisture content exceeds that permitted in the manufacturer's printed directions.

G. Clean concrete floor surfaces scheduled to be painted with a 5% solution of muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid and allow to dry before painting.

H. Wood: Clean wood surfaces to be painted of all dirt, oil or other foreign substances with scrapers, mineral spirits, and sandpaper as required. Sandpaper smooth those finished surfaces exposed to view and dust off. Scrape and clean small, dry seasoned knots and apply a thin coat of white shellac or other approved sealer, before application of the priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

I. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, face, undersides, and backsides of such wood, including cabinets, counters, cases, paneling, etc. When
transparent finish is required, use spar varnish for backpriming.

J. Backprime paneling on interior partitions only where masonry, plaster, or other wet wall construction occurs on backside.

K. Seal tops and bottoms of wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

L. Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.

M. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with the same type shop primer.

N. Galvanized metal to be painted shall be thoroughly washed with a solution of 1/2 pint Blue Vitrol, 2 oz. 30% Muriatic Acid in one gallon of water, or other approved solution, then thoroughly washed with clean water. Metal shall be dry before paint is applied.

O. Dents, cracks, hollow places, open joints and other irregularities in metal work to be painted shall be filled with an approved metal filler suitable for the purpose, which after setting, shall be sanded to a smooth, hard finish.

3.03 MATERIALS PREPARATION:

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

3.04 APPLICATION:

A. General: Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the type of material being applied.

B. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance.

C. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.

D. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.

E. Paint the back sides of access panels, and removable or hinged covers to match the exposed surfaces.
F. Finish exterior doors on tops, bottoms and side edges the same as the exterior faces, unless otherwise indicated.

G. Sand lightly between each succeeding enamel or varnish coat.

H. Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise specified.

I. Minimum Coating Thickness: Apply each material at not less than the manufacturer's recommended spreading rate, to provide a total dry film thickness of not less than 5.0 mils for the entire coating system of prime and finish coats for 3-coat work.

J. Prime Coats: Apply a prime coat to material which is required to be painted or finished, and which have been prime coated by others.

K. Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no-burn-through or other defects due to insufficient sealing.

L. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture.

M. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.

N. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

O. Transparent (Clear or Stained) Finishes: Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

   a. Provide satin finish for final coats, unless otherwise indicated.

P. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.05 CLEAN-UP AND PROTECTION:

A. Clean-Up: During the progress of the work, remove from the project daily all discarded paint materials, rubbish, cans and rags.

B. Upon completion of painting work, clean all window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

C. Protection: Protect other work against damage by painting and finishing work. Correct any damages by cleaning, repairing or replacing, and repainting, as directed by the Architect.
D. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

3.06 PAINTING AND FINISHING SCHEDULE:

A. Plans, schedules, and details on the drawings indicate the extent of work to be performed. The Architect shall select colors from the manufacturer’s full color line available for the product furnished.

B. Provide the scheduled paint systems for the various substrates indicated. The schedule is general in nature; therefore, some of the listed substrates and/or areas listed may not be incorporated in the work of this project.

C. Except as noted otherwise on the drawings or in these specifications, furnish products equal and similar to ICI DULUX products denoted in the following schedule.

<table>
<thead>
<tr>
<th>SUBSTRATE MATERIAL</th>
<th>PAINT MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Finish</td>
</tr>
<tr>
<td><strong>METALS</strong></td>
<td></td>
</tr>
<tr>
<td>Exterior Ferrous Metal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 coat</td>
</tr>
<tr>
<td></td>
<td>2 coats</td>
</tr>
<tr>
<td>Interior Ferrous Metal including doors</td>
<td>1 coat</td>
</tr>
<tr>
<td></td>
<td>[Semi-Gloss]</td>
</tr>
<tr>
<td>Aluminum</td>
<td>1 coat</td>
</tr>
<tr>
<td></td>
<td>2 coats</td>
</tr>
<tr>
<td>Interior And Exterior Ferrous Metal</td>
<td>1 coat</td>
</tr>
<tr>
<td>Handrails</td>
<td>2 coats</td>
</tr>
<tr>
<td>Miscellaneous Galvanized Metal</td>
<td>1 coat</td>
</tr>
<tr>
<td><strong>GYPSUM BOARD</strong></td>
<td></td>
</tr>
<tr>
<td>Walls and bulkhead soffits</td>
<td>1 coat</td>
</tr>
<tr>
<td></td>
<td>[Eggshell]</td>
</tr>
<tr>
<td></td>
<td>[Semi-Gloss]</td>
</tr>
<tr>
<td>Janitors closets, custodial rooms</td>
<td>1 coat</td>
</tr>
</tbody>
</table>
### Semi-Gloss

<table>
<thead>
<tr>
<th>Surface</th>
<th>Coats</th>
<th>Paint Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen</td>
<td>1</td>
<td>DULUX Insul-Aid Latex Vapor Barrier Primer Sealer No. 1000-1200</td>
</tr>
<tr>
<td>Semi-Gloss</td>
<td>2</td>
<td>DULUX LifeMaster Pro HB Tile-Like Acrylic Coating Series No. 5440</td>
</tr>
<tr>
<td>Exterior Soffits (Gypsum board)</td>
<td>1</td>
<td>DULUX Alkali Resistant Primer No. 4160-7100</td>
</tr>
<tr>
<td>Satin</td>
<td>2</td>
<td>DULUX Spred Ultra Exterior Acrylic Latex Satin Series No. 2402</td>
</tr>
<tr>
<td>Exterior Soffits (Wood hardboard, etc.)</td>
<td>1</td>
<td>DULUX Exterior Alkyd Primer No. 2110-1200</td>
</tr>
<tr>
<td>Satin</td>
<td>2</td>
<td>DULUX Spred Ultra Exterior Acrylic Latex Satin Series No. 2402</td>
</tr>
<tr>
<td>Interior wood doors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MASONRY

<table>
<thead>
<tr>
<th>Surface</th>
<th>Coats</th>
<th>Paint Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior block and concrete</td>
<td>2</td>
<td>DULUX Ultra-Hide Acrylic Block Filler #3010-1200</td>
</tr>
<tr>
<td>Semi-Gloss</td>
<td>2</td>
<td>DULUX LifeMaster Pro HB Tile-Like Acrylic Coating Series No. 5440</td>
</tr>
</tbody>
</table>

3.07 CONTRACTORS PAINT SCHEDULE:

A. Prior to beginning any painting operation, submit to the Architect for review and for the Owner's Maintenance records, four copies of a complete painting schedule which includes actual products proposed for use on this project. Schedule shall be similar to the schedule included within these specifications and shall completely identify each product by name, catalog number, etc. Identify fillers, primers, finish coats, etc.

B. In addition to this schedule, submit complete manufacturer’s product description including recommended usage and compatible products for each material proposed for this project.

3.08 FIRE AND SMOKE IDENTIFICATION OF WALLS AND PARTITIONS:

A. In concealed spaces where corridor partitions, smokestop partitions, horizontal exit partitions, exit access corridors, and exit enclosure walls, extend above decorative ceilings, identify these walls with permanent signs or stenciling with red paint in a manner acceptable to the local authority having jurisdiction over the project.

B. If stenciling is used, letters shall be a minimum 1-1/2 inches high and shall read "Fire and Smoke Barrier - Protect all Openings."
C. Locate signs on both sides of partition above decorative ceiling, at intervals not exceeding 25 feet on center and a minimum of one location in any room having a wall length less than 25 feet.

END OF SECTION 09900
SECTION 10440 - INTERIOR SIGNAGE

PART 1    GENERAL

1.01 SECTION INCLUDES

A. Interior signage of the following types:
   1. ADA compliant interior signage, without borders.
   2. Fire evacuation, area of rescue assistance and specialty signs.

1.02 REFERENCES


1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with requirements of ANSI/ICC A117.1 and ADAAG.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inspect products upon receipt. Store products in manufacturer's packaging until ready for installation.

1.06 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.

PART 2    PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Best Sign Systems
   2. Andco
   3. AOA
   4. Signage Industries
   5. Gemini
   6. ASI Sign Systems

B. Substitutions: See Section 01600 - Product Requirements.

2.02 INTERIOR SIGNS

A. ADA-Compliant Interior Signage, Borderless:
   2. Type: Three-in-one construction without borders; three-ply melamine plastic laminate.
with phenolic core signs with lettering and symbols raised 1/32 inch from sign plate face.
3. Sign Thickness: 1/8 inch thick or 1/4 inch thick as required.
4. Construction: One-piece; added-on or engraved characters not acceptable.
5. Lettering Style: Helvetica Medium, upper case.
6. Braille: Grade 2 Braille, placed directly below last line of letters or numbers.
8. Contrast: Letters numbers and symbols shall contrast with background.
10. Color of Plastic: As selected from manufacturer's standard colors.
12. Color of Background: As selected from manufacturer's standard paint colors.
13. Letter and Number Sizes:
   a. Room numbers and floor name on floor module, 7/8 inch high.
   b. Lettering for room usage and directional identification, 5/8 inch high.
   c. Lettering for restroom identification, 7/8 inch high; corresponding symbols 4 inches high; symbol on symbol only signs minimum 3-1/2 inch high.
15. Sign Sizes:
   a. Restroom and symbol signs, 8 by 8 inches.
   b. Room identification signs, 8 by 8 inches.
   c. Room number signs, 8 by 8 inches.
   d. Changeable message signs, Provide (2) 4”x8” interchangeable signs stacked over top of each on an 8”x8” backing. Top sign to contain room name. Bottom sign to contain personal name. Provide a $75.00 allowance for each of these type signs. Signage shall be verified with Architect.

B. Fire Evacuation and Specialty Signs:
2. Fire Evacuation Signs: 8 by 10 inches satin bronze with copy and maps surface oxidized brown. (Not required)
3. Evacuation Plans Signs: 12 by 12 inches 'MP' plastic with copy and map engraved and paint-filled 2 standard paint colors. (Not required)
4. Emergency Exit Only Signs: 18-1/2 by 6-1/2 inches 'MP' plastic with copy raised with background and symbol painted 2 standard paint colors.
5. Lettering Style: Typeface as selected, upper case.
6. Lettering Location: Centered on sign.
7. Corners: Square.

PART 3    EXECUTION
3.01 EXAMINATION
A. Examine installation areas to ensure that conditions are suitable for installation.
B. Examine signage for defects prior to installation. Do not install damaged signage.
3.02 PREPARATION
A. Verify mounting heights and locations for interior signage will comply with referenced
B. Clean mounting locations of dirt, dust, grease or similar conditions that would prevent proper installation.

3.03 INSTALLATION

A. Install signs level, plumb, without distortion, and in proper relationship with adjacent surfaces using manufacturer’s recommended standard mounting system.
   1. Mounting: Mount with vinyl foam tape.
   2. Removal: Remove adhesive from exposed sign surfaces as recommended by manufacturer.
   3. Cleaning: Clean signs after installation as recommended by manufacturer.
   4. Replacement: Replace damaged products before Substantial Completion.

3.04 INTERIOR SIGNAGE SCHEDULE

A. Provide unisex accessible toilet signs.
B. Provide gender appropriate accessible toilet signs.
C. Provide tactile signs stating “EXIT” and complying with ICCA117.1.
D. Provide room identification signs for non offices. Room name only.
E. Provide room identification sign with interchangeable name plate for offices. Room name and personal name.

END OF SECTION 10440
SECTION 10522—FIRE EXTINGUISHER, CABINETS, AND ACCESSORIES:

PART 1   GENERAL

1.01  RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

1.02  SUMMARY:

This section includes the following:

- Fire extinguishers.
- Fire extinguisher cabinets.
- Fire extinguisher mounting brackets.

1.03  SUBMITTALS:

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

Product Data for fire extinguisher cabinets include rough-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style, door construction, panel style, and materials.

Samples for initial selection purposes in the form of manufacturer's color charts consisting of actual units or sections of units showing full range of colors, textures, and patterns available for each type of fire extinguisher cabinet finish indicated or exposed to view.

1.04  QUALITY ASSURANCE:

Single-Source Responsibility: Obtain extinguishers, if required, and cabinets from one source from a single manufacturer. If both are required for the project, verify that specified cabinets will accommodate specified extinguishers.

UL-Listed Products: Fire extinguishers shall be UL listed with UL Listing Mark for type, rating, and classification of extinguisher.

PART 2  PRODUCTS

2.01  MANUFACTURERS:

Extinguishers: Fire extinguishers shall be Series Multi-Purpose Dry Chemical Model No. MP10.
Cabinets: Furnish and install fire extinguisher cabinets equal and similar to “Architectural” Series Model AL-2409-6R semi-recessed 2-1/2” rolled edge as manufactured by “Larsens”. Door type shall be solid clear anodized aluminum with pull handle, latch and red vertical die cut letters, “FIRE EXTINGUISHER”. Box shall be made of cold rolled steel with ¾” wide flange. Cabinets located within fire rated partitions shall be fire-rated cabinet with Larsen’s Flame-Shield option, certified and listed by Warnock-Hersey for one and two hour combustible and non-combustible wall systems to meet the requirements of UBC Standard 7-5 (ASTM E-814-83). All fire-rated cabinets to have trims with reinforced corners and factory supplied anchoring devices. All components shall be furnished in compliance with ADA standards.

Subject to compliance with requirements of these specifications, other manufacturers whose products may be incorporated in the work include, but are not limited to, the following:

- J.L. Industries
- Modern Metal Products by Muckle.
- Potter-Roemer, Inc.
- Samson Metal Products, Inc.
- Watrous Inc.

2.02 FIRE EXTINGUISHERS: Not required for this project.

2.03 FIRE EXTINGUISHER CABINETS:

General: Provide fire extinguisher cabinets of suitable size for housing fire extinguishers of types and capacities indicated.

Construction: Manufacturer’s standard enameled steel box, with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.

Fire-Rated Cabinets: UL-listed with UL Listing Mark with rating of wall where it is installed. All cabinets shall be rated for one-hour construction.

Cabinet Type: Suitable for mounting conditions indicated of the following type:

- Recessed: Cabinet box (tub) fully recessed in walls of sufficient depth to suit style of trim indicated.

Trim Style: Fabricate trim in one piece with corners mitered, welded, and ground smooth.

- Exposed Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

Door Material and Construction: Manufacturer’s standard door construction, of material indicated, coordinated with cabinet types and trim styles selected.

- Aluminum-Backed Acrylic: Manufacturer’s standard aluminum backed obscure acrylic with silk screen lettering or design applied to back of acrylic face.
Acrylic: Smooth.

Identify fire extinguisher in cabinet with FIRE EXTINGUISHER lettering applied to door horizontally. Lettering to comply with authorities having jurisdiction for letter style, color, size, spacing, and location. Lettering to be black on white background except as otherwise required by local ordinance.

Application Process: Manufacturers standard application for product specified.

Door Style: Manufacturer's standard design.

Break Glass Panel: Float glass, 1/8 inch thick, with inside latch and lock.

Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam-action latch, or door pull, exposed or concealed, and friction latch. Provide concealed or continuous type hinge permitting door to open 180 deg.

2.04 FINISHES FOR FIRE EXTINGUISHER CABINETS, GENERAL:

Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering prior to shipping.

2.05 ALUMINUM FIRE EXTINGUISHER CABINET FINISHES:

Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

Class II Clear-Anodized Finish: AS-M12C22A31 (Mechanical Finish: as fabricated, nonspecular; Chemical Finish: etched, medium matte; Anodic Coating: Class II Architectural, clear film thicker than 0.4 mil).

Surface Preparation: Solvent clean surfaces complying with SSPS-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel complying with SSPC-SP 5 (white metal blast cleaning) or SSPC-SP 8 (pickling).

Baked Enamel Finish (for cabinet interior): Immediately after cleaning and pretreatment, apply manufacturer's standard two-coat baked enamel finish consisting of prime coat and thermosetting topcoat. Comply with paint manufacturer's instructions for applying and baking to achieve a minimum dry film thickness of 2.0 mils.

Color and Gloss: Manufacturer's standard color and gloss designations.

PART 3 EXECUTION

3.01 INSTALLATION:
Follow manufacturer's printed instruction for installation.

Install in locations and at mounting heights indicated on drawings or, if not indicated, at heights to comply with applicable regulations of governing authorities, including Americans with Disabilities Act requirements.

Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

Fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb.

END OF SECTION 10522
SECTION 10800—TOILET AND BATH ACCESSORIES:

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

This section includes toilet and bath accessory items as scheduled on the drawings and as specified herein.

1.03 SUBMITTALS:

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

Product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gages, profiles, mounting method, specified options, and finishes.

Samples and Schedules: (Not required for this project)

Setting drawings where cutouts are required in other work, including templates, substrate preparation instructions, and directions for preparing cutouts and installing anchorage devices.

Maintenance instructions including replaceable parts and service recommendations,

1.04 QUALITY ASSURANCE:

Inserts and Anchorages: Furnish accessory manufacturers' standard inserts and anchoring devices that must be set in concrete or built into masonry or structural bracing for other construction. Coordinate delivery with other work to avoid delay.

Single-Source Responsibility: Provide products of same manufacturer for all listed accessories except where other manufacturers are specified for particular products in these specifications.

1.05 PROJECT CONDITIONS:

Coordination: Coordinate accessory location, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.06 WARRANTY:

Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.
Warranty Period: 15 years from date of Acceptance of the Project.

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.

Provide manufacturer's standard warranties for other specified accessories.

PART 2   PRODUCTS

2.01  MANUFACTURERS:

Furnish and install toilet accessories as scheduled which are equal and similar to products manufactured by Bobrick Washroom Equipment, Inc. Bobrick model numbers for each accessory is given in the schedule.

Subject to compliance with requirements of these specifications, other manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

A & J Washroom Accessories
American Specialties, Inc.
Bradley Corporation
McKinney/Parker

2.02  MATERIALS:

Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 0.034-inch (22 gage) minimum thickness.

Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, ASTM B16; Castings, ASTM B30.

Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 0.04 inch (20 gage) minimum. Surface preparation and metal pretreatment as required for applied finish.

Galvanized Steel Sheet: ASTM A 527, G60.

Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

Baked Enamel Finish: Factory-applied, gloss white, baked acrylic enamel coating.

Mirror Glass: Nominal 6.0-mm (0.23-inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.


Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.
2.03 FABRICATION:

General: Only a maximum 1-1/2 inch diameter, unobtrusive stamped manufacturer logo, as approved by the Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by either a printed, waterproof label or a stamped name-plate, indicating manufacturer’s name and product model number.

Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang door or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors or access panels with full-length, stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamper proof glass installation and prevent moisture accumulation as follows:

Provide galvanized steel backing sheet, not less than 0.034 inch (20 gage) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamper proof, and theftproof installation, as follows:

Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

Keys: Provide universal keys for access toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of six keys to Owner’s representative.

PART 3 EXECUTION

3.01 INSTALLATION:

Install toilet accessory units according to manufacturer’s instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated. Comply with mounting heights required by ADA Guidelines where indicated on drawings.

Secure mirrors to walls in concealed, tamper proof manner with special hangers, toggle bolts, or screws. Set units plumb, level and square at locations indicated, according to manufacturer’s instructions for type of substrate involved.

Install grab bars to withstand a downward load of at least 250 lbf, complying with ASTM F 446.

3.02 ADJUSTING AND CLEANING:

Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or
defective items.

Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION 10800
SECTION 12300---MANUFACTURED CASEWORK:

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

Drawings and General provisions of the contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.02 SCOPE:

Work Included:

The extent of laminate clad casework as shown on the drawings.

The work includes the fabrication and installation of laminate clad casework components of base cabinets, wall cabinets, tall cabinets, shelf units, miscellaneous storage shelving and hardware, countertops and other units as specified.

Work Not Included:

- Furnishing or installation of rubber base on all casework.
- Furnishing or installation of general millwork items.
- Furnishing or installation of mechanical items such as piping, fittings and ducts, unless specifically specified.
- Furnishing or installation of electrical items such as wiring, outlets and fixtures, unless specifically specified.
- Furnishing or installation of plumbing items such as piping, fittings and sinks, unless specifically specified.

The Prime General contractor shall be responsible for coordinating the construction of other prime contractors and subcontractors whose work is to be fitted in or to the casework. In the case of certain items of general millwork such as window stools and jambs or casings which may be covered in plastic laminate and fitted to casework, the General Contractor may, at his option, provide those items as part of the work of the casework vendor.

1.03 MANUFACTURERS:

Furnish and install plastic laminate casework equal and similar to the standard designs of products manufactured by TMI Systems Design Corp., Dickinson, ND.

Subject to compliance with requirements of these specifications, other manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

- LSI Corp. Of America, Inc.
- Steven Industries, Teutopolis, ILL
- Nolen Products, Knoxville, TN
- Southside Cabinets, Danville, VA

Manufacturers shall show evidence of minimum five (5) years experience in providing manufactured casework systems for similar type projects.
Substitutions: Manufacturers not listed and wishing to bid on the casework shall submit data and cabinet samples to the Architect for approval to bid not less than seven (7) days prior to date set for opening bids. Any proposed changes in cabinet configuration must be detailed at time of submittal. In order to provide a means of evaluation, all bidders proposing to bid substitutions shall submit sample units showing in full scale - joinery, general construction, material and finish of the manufacturer. Failure of this sample to meet specification requirements shall be cause for rejection.

Shop Drawings: Shop drawings shall be submitted to the Architect for review prior to fabrication. These drawings will show size, arrangement and type of material, cross sections, connections, anchorage, and relationship to adjacent work. After review, copies of the drawings will be returned in accordance with the General Conditions.

Dimensions: The Casework supplier shall verify dimensions of all cabinet locations in the building prior to fabrication.

Samples: Samples of plastic laminate, hardware, etc. shall be submitted to the Architect for selection and approval as requested.

Plastic laminate colors and patterns shall be as selected by the Architect from the casework manufacturer's standard palette. The Architect shall be allowed to choose for each contiguous unit, a separate color for cabinet body, doors and drawer, and cabinet top - total three (3) colors. The total number of different colors that may be chosen by the Architect for the entire project shall not be limited.

Standards: Plastic laminate casework shall comply with AWI quality standard 1600 "Modular Casework".

Guarantee: The casework manufacturer shall guarantee all materials and workmanship covered by this section, normal wear and tear excluded, for a period of one (1) year from date of acceptance.

PART 2 PRODUCTS

2.01 MATERIALS:

Plastic Laminates:

Exposed exterior vertical surfaces shall have Formica, or approved equal, high pressure plastic laminate .028" inch thick (GP-28).

Countertops shall have Formica, or approved equal, high pressure plastic laminate .050" inch thick (GP-50).

Countertops shall be balanced with an acceptable balance sheet.

Interior sides, bottoms, shelves, backs, exposed bottoms of wall units, and intermediates of closed cabinets (i.e., concealed surfaces) shall be Formica or approved equal, melamine laminate in light beige or dove grey. (Vinyl overlays are not acceptable).

Interior sides, bottoms, shelves, backs and intermediates of all open cabinets (i.e. exposed surfaces) shall be Formica, or approved equal, high pressure plastic laminate .0280" thick (GP-28).

Particle Board:
Particle board shall have a minimum density of 45 lbs. per cubic foot with a moisture content not to exceed 8% and shall meet or exceed ANSI A208.1-1979. Aspen Board is not acceptable. Laminate as above specified.

Pre-finished Hardboard:

Pre-finished wood fiber hardboard shall be .250 inch thick.

Finished surfaces shall be smooth, hard, moisture resistant and a uniform tan color. Laminate as above specified.

Rails and Sub-Top:

Rails shall be used only on sink bases and then supported by a reinforcing aluminum "Z" bar to prevent countertop deflection. All rails will be .750 inch particle board, laminated top and bottom as specified above and edge banded with .050 inch high pressure laminate.

Each unit, other than sink units, shall have a full-depth sub-top of .750 inch particle board, laminated top and bottom as specified above and edge banded on the front edge with .050 inch high pressure laminate. Sub-top is to be let into sides, glued and screwed for secure fit.

Plastic Edging:

Exposed shelf edges shall be .050 inch high pressure laminate edge banding.

Side, partition, top and bottom edges to be .050 inch high pressure laminate edge banding.

All edges of door and drawer faces to be 3mm PVC solid, high-impact, purified and color-thru and shall be machine applied with hot melt adhesives and machine trimmed (all edges) for uniform appearance. 1mm PVC shall not be accepted.

Hardware:

Pin Tumbler Locks - (Where noted on drawings)

Locks shall be keyed differently (each lock furnished with two keys), and master-keyed.

Drawer and Doors: National Lock No. M4-7054C tumbler.

Hinges -

Heavy duty five knuckle style, with interlaying leaves capable of 270° swing. Hinge shall be minimum .090" thick, hospital tipped with non-removable pin. Hinges shall have epoxy finish. Color to be selected by the Architect.

Doors less than 36" in height shall have 2 hinges per door; doors 37" to 62" in height shall have 3 hinges per door and doors 63" to 80" shall have 4 hinges per door.

Pulls -

Drawer and door pulls shall be epoxy finished metal wire style. Color to be selected by the Architect.
Drawer Slides -

Typical Drawers: Blum bottom mount BS23OE.

Index Followers - (provide in all file drawers)

File Drawers: National No. 61-081 or approved equal.

Adjustable Shelving -

Holes bored on 1 inch centers.

Supports: Nylon/plastic.

"Captive" non-tip shelf supports.

Grommets –

Manufacturer’s standard PVC grommets, see drawings for locations.

Color to be selected from manufacturer’s standard colors.

PART 3 EXECUTION

3.01 CONSTRUCTION:

Type of Construction:

Flush Overlay - All units shall be Flush Overlay Construction such that door and drawer faces cover all of the cabinet body members with spaces between face surfaces sufficient for operation clearances only (nominally 1/8").

Workmanship:

All parts shall be machined for accurate fit and assembled with appropriate fastenings and adhesives to result in true, level and plumb units with no discernible tool marks. (See Cabinet Joinery.)

Modified or special units shall be constructed with similar detail and finish.

Base: All cabinets which set on floor shall have a separate subbase constructed of exterior plywood. Subbase shall be set and leveled for entire cabinet before base cabinets are placed.

Sides and Bottom: All cabinet sides and cabinet bottoms shall be 3/4" particle board. All surfaces shall be laminated as above specified.
Bottom: All cabinet bottoms shall be 3/4" particleboard. All surfaces shall be laminated as above specified.

Backs: Backs exposed on the exterior shall be 3/4" particleboard. Backs on drawer cabinets shall be 1/4" prefinished hardboard and backs on all open cabinets and door cabinets shall be 1/2" particleboard. All surfaces shall be laminated as above specified.

Doors: Doors shall be 3/4" particleboard with all surfaces and exposed edges treated as above specified.

Drawers: Drawer fronts shall be 3/4" particleboard. Drawer box (sides, back and sub-front) shall be 1/2" thick particleboard and the drawer bottom shall be 1/4" hardboard. All surfaces and exposed edges shall be treated as above specified.

Shelves and Intermediates: All intermediates shall be 3/4" particleboard. Shelves less than 30" long shall be 3/4" particleboard. Shelves 30" and longer shall be 1" particleboard. All shelves shall be adjustable. All surfaces and exposed edges shall be treated as above specified.

Countertops and Splashes: (Plastic Laminate)

In-line installation shall have continuous tops with tite-joint fasteners. Sink cutouts shall be made by the casework contractor. Tops and splashes shall be 3/4" particleboard with built-up exposed edge 1-1/2". Tops at sinks shall be 3/4" exterior plywood with waterproof glue, edge and backsplash to match other counter-tops. Top and splash shall be laminated as above specified. Apply sealant to backside of all splashes.

Cabinet Joinery: Tops and bottoms shall be joined to cabinet ends using a minimum of (6) six 10mm fluted hardwood dowels (industrial grade) for 24" deep cabinets and (4) four dowels for 12" deep cabinets. Cases shall be assembled using glue and case clamping for secure joints and cabinet squareness. Attach countertops securely to base units.

Spline and glue joints in countertops; provide concealed mechanical clamping of joint. Internal cabinet components such as fixed horizontals, intermediates, rails, sub-tops, etc. shall be glued and doweled in place. Drawer boxes shall also be glued and doweled and bottom shall be fully housed into a 1/4" x 1/4" dadoed groove in sides, front and back. A seal of hot-melt adhesive shall be applied to exposed bottom joints following assembly. Should bottom width exceed 30", 3/8" thick material and or stretchers must be applied.

Joints in plastic laminate finish in countertop shall not exceed 1/32" width. Matching seam fill material recommended by laminate manufacturer may be used to fill joints less than 1/32" provided color match and workmanship is found to be acceptable by the Architect. Joints in countertops shall not be accepted except where length of countertop exceeds the maximum manufactured length of the plastic laminate finish.

3.02 INSTALLATION:

Work Force: Shall be manufacturer's authorized representative, installed per manufacturer's standard procedure.

Workmanship: Provide connecting and attaching devices, closures and trim as required. Set casework accurately in place, scribe and permanently secure to wall and/or floor. Fasten splashes to countertops with concealed screws. Set splashes in waterproof sealant to prevent water from entering the joint between countertop and splash.
Clean-Up: Remove all debris from the site as it accumulates. Clean all casework exterior and interior at completion of installation.

END OF SECTION 12300